THE CONSEQUENCES OF THE KOREAN FINANCIAL CRISIS ON POLICY, FIRMS, CORPORATE GOVERNANCE AND INSIDER TRADING

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This dissertation delves into corporate behavior around the 1997 Asian crisis which had a significant effect on Korean firms and the economy. It includes three main parts.

Chapter 2 looks at corporate governance and firm value in Korea. Since the Asian crisis the corporate governance issue has changed remarkably in Korea. The Korean government has amended many provisions regarding this issue. This paper first surveys the series of amendments to associated provisions and laws. Then we investigate the relationship between corporate governance and firm value using the long-term event study method to see how these amendments affect firm value.

Chapter 3 examines the structural changes of seventy firms in the Korean Stock Exchange around the Asian crisis under the assumption that break dates are unknown. The Korean economy was broken up by the crisis in 1997 and then it took some years for it to be recovered through the effort of the government and firms. Thus, it is natural to think that firms' specific parameters might have been changed reflecting firms' efforts to survive the crisis. This paper assumes that the structural break dates are unknown. Then we estimate them and test for structural change of unknown timing around the crisis on each of seventy firms in the KSE.

Chapter 4 is an empirical investigation of insider trading. The Korean economy had a hard time during the Asian crisis. To restructure and reform the economy the Korean government implemented IMF guidelines which it agreed to follow when receiving IMF's $57 billion rescue bailout package. In this chapter we evaluate the

restructuring and reform in the past decade in terms of the cleanliness of the stock market in terms of insider trading. Considering the provisions regarding insider trading in Korea, it is hard to quantify the degree of insider trading using only reported insider trading data. Thus, this paper adopts the event study method to analyze the degree of insider trading before and after the reforms. We find that there is evidence suggesting that there was insider trading before the crisis reforms which was subsequently (or eliminated) following these reforms.

BIOGRAPHICAL SKETCH

Hyunkyung Choe was born on June 19, 1968 in the city of Daegu, Korea. She lived there until she became seven and moved to Seoul. She was awarded a Bachelor Degree from Sookmyung University in Seoul. She married Sungho Kim in 1993 and had a son, Khan Kim in 1997. Since she had been attracted by economics, she returned to the college where she obtained her Bachelor Degree and was awarded a Master's in economics in 2000. Filled with enthusiasm for economics, she decided to do her Ph.D. in economics at Cornell and moved to the United States in 2003 for the first time in her life. After spending five years at Cornell, she obtained a Ph.D. in economics in August 2008. Her first position as a Ph.D. economist is at Korea Institute for Industrial Economics and Trade in Seoul, Korea. She will never forget whom she has met in the journey of this Ph.D. period and what she has learned at Cornell.

For my parents.

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There was a moment when I felt that life is just a relationship that has been built by people I met and myself. My being awarded a Ph.D. is kind of late about 10 years later than for other PhDs. Thus, it is certain that I have met more persons and have learned many more things from them than others have. When I returned to college after I was awarded a Bachelor degree, married, and had a son, I was filled with indescribable enthusiasm for economics, which I had tried to learn in my college years. At first I did not even dream of holding a Ph.D. diploma in economics in my life. I was just happy reading, learning, and discussing economics. There have been enormous helpers to make me dream and assist me to make the dream come true. I thank all the persons I met at Sookmyung University where I was initially inspired by the beauty of economics and at Cornell University where I became an economist.

Among them, first and foremost, I feel obliged to express my gratitude to my principal advisor, Professor Robert Masson. It was a great honor to have him as my advisor. I have learned from him what graduate students should do: to learn to research on their own, to make meaningful questions, to figure out how to answer them, and to devise presentations of the findings. While I was doing this, he consistently assisted and supervised me in every step of the way. My indebtedness to him for this invaluable lesson can never be expressed by any word. He has made many detailed comments and offered insightful suggestions. Without his help, my dissertation would not have been possible. I appreciate his consideration and comments.

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Seventeen years ago, I had the good luck of meeting a considerate and understanding man, Sungho Kim, who has been married to me since 1993. We have been building a strong and consistent partnership and have been the best friend for each other. I would like to acknowledge him, who has endured the loneliness and inconvenience due to living apart for years and has given me incessant support. I believe that my obtaining a Ph.D. diploma is not just an end nor a start of something new. It is just one alternative among many which Sungho and I have looked for hoping to find the way of life we had to pursue in our lives. I thank him for having been my best friend during the long journey of my life.

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CHAPTER 1

INTRODUCTION

The Korean economy, which was devastated by the Korean War of 1950, has continued to grow rapidly on the basis of strong government-driven economic policies since the 1960s, such as the protection of domestic industries aided by import barriers, focusing on exports and industrialization. As the size of its economy got bigger in the 1980s, and there began to be a growing doubt about these government-led policies, its economic policies veered to liberalization and opening of the economy. In the early 1980s, the commercial banks were privatized, and on August 23, 1991 the 'phase-4 interest rate liberalization plan' was announced. The full-blown efforts of Korea to open its capital market were made as part of its endeavor to globalize its economy and join OECD, and it started with the 'phase-3 banking financial deregulation and market opening plan' in June 1993. From 1994 to 1996 the government deregulated the overseas activities of banking and non-banking financial institutions to a great extent, and accordingly domestic banks opened 28 overseas branches. The Monopoly Regulation and Fair Trade Act was enacted and enforced in April 1981, but the government's intervention in industrial policies, such as entry barriers and investment adjustment, and wide-ranging price regulation continued. After the launch of a new government in the late 1980s, substantial regulatory reform took place. In line with this, regulation of the Chaebols[1] (conglomerates) was gradually reinforced. On top of this trend, the Korean economy was influenced by the Asian financial crisis in 1997, and accelerated its opening and liberalization.

[1] The term, Chaebols, is used in this paper as an interchangeable word with business groups or conglomerates.

Table 1.1 shows the macro variables prior to the crisis. As this table indicates, the macro variables did not show anything special enough to foretell any crisis.

Table 1.1 Macro Variables in 1990s

(Unit: %)

	1991	1992	1993	1994	1995	1996	1997	1998
Budget Deficit / GDP	-1.8	-0.7	0.3	0.4	0.3	0.2	-1.4	-3.9
Trade Deficit / GDP	-2.7	-1.2	0.2	-1.0	-1.7	-4.1	-1.6	11.7
REER*	117.0	110.0	106.9	108.1	109.4	113.3	106.9	81.5
Real Interest Rate (CB)	7.9	9.6	10.0	7.8	6.7	9.3	6.9	9.0
Real Growth Rate (M3)	14.4	13.2	11.9	15.6	10.8	11.0	8.9	6.2
Inflation Rate	9.3	6.2	4.8	6.3	4.5	4.9	4.4	7.5
Real GDP Growth Rate	9.4	5.9	6.1	8.5	9.2	7.0	4.7	-6.9

REER: Real Effective Exchange Rate*
Source: Bank of Korea, OECD

The trends in the total external liabilities of the 1990s tell us that the total external liabilities exhibited a low growth rate in the early 1990s, whereas in the mid-1990s they grew more than 30%. In particular, short-term foreign debt relative to foreign exchange reserves rapidly increased. This shows that the vulnerability of the Korean economy to foreign currency liquidity is increasing. The trends in total external liabilities are summarized in Table 1.2.

Table 1.2 External Liabilities in Korea in 1990s

(Unit: $ 0.1 billion, %)

	1992	1993	1994	1995	1996	1997	1998
Total External Liabilities	629.0	670.0	887.0	1197.0	1643.4	1580.6	1493.5
(change rate)	_	6.5	32.4	35.0	37.3	-3.8	-5.5
External Liabilities / GDP	20.0	19.4	22.0	24.5	31.6	33.2	46.5
Short Term Liabilities / Total Liabilities	58.8	60.2	65.8	65.8	56.6	40.0	20.6
Short Term Liabilities / ForEx reserves	215.7	198.9	227.5	240.6	279.8	309.8	59.2

Source: Ministry of Strategy and Finance

The asset quality of the financial sector can be indirectly measured by the financial health of the company. In Korea it can be said that the financial health of the Chaebols with large assets and liabilities is more important. Table 1.3 shows the ROA trends.

Table 1.3 ROAs of the Top 30 Chaebols in Korea

(Unit: %)

	1993	1994	1995	1996	1997
1st-5th Chaebols	1.86	3.54	4.86	1.41	0.43
6th-10th Chaebols	0.87	1.17	1.10	-0.49	-2.15
11th-30th Chaebols	-0.40	-0.06	-0.08	0.08	-3.00
Total Average	1.11	2.19	3.15	0.23	-2.13

Source: Fair Trade Commission

According to this table, the Chaebols ranked between 11th and 30th place[2] were in the negative from 1993 to 1995. The profitability of the Chaebol groups is

[2] Through 2001, the Fair Trade Commission had been announcing the top thirty business groups annually to regulate them. Since 2002, however, it has announced three kinds of business groups each year to more efficiently regulate them: business groups subject to the limitations on debt guarantees, business groups subject to the limitations on mutual investment, and business groups subject to the limitations on total investment amount.

deteriorating. Considering the fact that the Korean economy was booming in the 1994-1995 period, this deterioration can be said to be all the more serious.

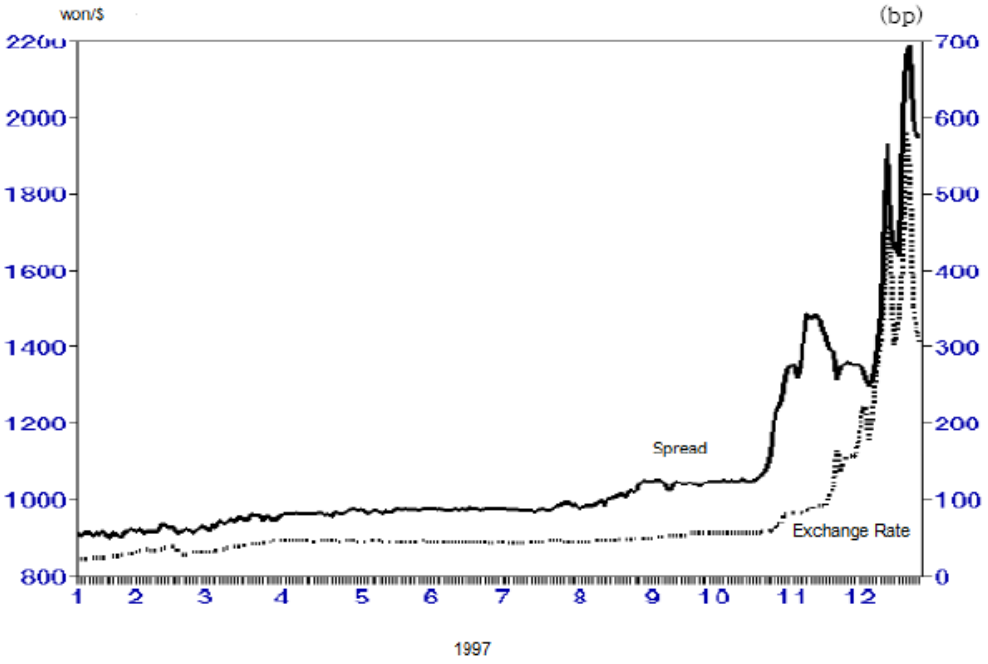

Figure 1.1 Spread and Exchange Rate
Source: Bloomberg, Bank of Korea, KDI Report 2007

The most common indicator for Korea's credit rating in the international financial market is the foreign currency spread[3] of the Industrial Bank of Korea. It got worse rapidly in late October, early November, and December of 1997. Figure 1.1 illustrates this spread.

As shown in Table 1.4, six Chaebol groups on the top 30 list in 1997 began to go bankrupt on January 23 in 1997, starting with the bankruptcy of Hanbo, ranked 13th. Accordingly, Moody's degraded the national credit rating of Korea from P1[4] to P2[5] on

[3] The spread between the interest rate of U.S. T-bills and that of bonds which the Industrial Bank of Korea issues.
[4] Issuers (or supporting institutions) rated Prime-1 have a superior ability to repay short-term debt obligations.
[5] Issuers (or supporting institutions) rated Prime-2 have a strong ability to repay short-term debt obligations.

August 5th, and S&P lowered the national credit rating from `stable' to `negative' on August 6th. The credit rating of Korea was downgraded again in October at the height of the Asian financial crisis, triggered by the crisis in Thailand.[6]

Table 1.4 Top 30 Chaebols Bankrupt in 1997

	Hanbo	Sammi	Jinro	Kia	Hiti	New Core
Bankruptcy Date	Jan. 23	Mar. 19	Apr. 21	Jul. 15	Nov. 1	Nov. 4
Ranking	14th	25th	19th	8th	24th	28th

Afterward, international creditors indiscriminately withdrew their savings from Korean banks in November, and as commercial banks could not cope with this exodus, they received emergency funds from the foreign currency reserves of the Bank of Korea. However, the reserves dried up, and the Korean Government ended up applying for IMF relief loans on November 21st. Table 1.5 shows the available foreign currency reserves of the Bank of Korea in those days.

There are differing opinions about what caused this financial crisis both at home and abroad, but on the whole the dominant opinion is that the instability of the international financial market and the insolvency of domestic banks and enterprises were the causes. To overcome this crisis, the government reformed the business sector, the financial sector, the labor market, and the public sector. The economic growth rate dropped to -6.9% in 1998, but then rose to 9.5% in 1999. In short, it recovered in a

[6] In addition to this, S&P and Moody's degraded the credit rating of Korea three times more in the year of 1997. S&P did on Nov. 26, on Dec.11, and on Dec. 23 in 1997. So did Moody's on Nov. 28, Dec. 10, and Dec. 22 in 1997.

Table 1.5 Foreign Exchange Reserves

(Unit: $ million)

	12.31 1996	3.31 1997	6.30 1997	9.30 1997	10.31 1997	11.30 1997	12.31 1997	1.31 1998
ForEx Reserves (A)	33.2	29.1	33.3	30.4	30.5	24.4	20.4	23.5
Deposit Foreign Branch Holding (B)	3.8	8.0	8.0	8.0	8.0	16.9	11.3	10.9
Miscellaneous (C)	_	_	_	_	0.2	0.2	0.2	0.2
Total ForEx Reserves [A-(B+C)]	29.4	21.1	25.3	22.4	22.3	7.3	8.9	12.4

Source: Bank of Korea

short period of time. However, the policies based on the IMF guidelines resulted in side effects such as the rapid shrinkage of aggregate demands, the bankruptcy of sound enterprises owing to high interest rates, and the increase of nonperforming debts. About this some argue that these guidelines aggravated the problem by using the method IMF employed in South America while ignoring the characteristics of Korea.

As the government policies began to stabilize the foreign exchange market, the government shifted gear to steps to stimulate the economy. Accordingly, attempts were made to reform the business, financial, labor, and public sector as mentioned above. Here, to be faithful to the objective of this study, only the structural reform of the business sector is examined. The priorities of the government's policy in the business sector were to handle insolvent enterprises incapable of redeeming debts and to reinforce the market regulations to prevent recurrence of an economic crisis. Table 1.6 shows how the economy changed. The first four variables can be interpreted as variables which explain the quantitative growth of the economy and the next four the qualitative growth of the economy. The last six variables are considered as variables which tell about economic stability. While the rate of corporate debt has decreased a lot, government and household debt have increased. Compared to the amount of

exchange reserves in 1997, it has been tremendously increased in these days. The BIS ratio[7] is getting better.

Table 1.6 Changes in Economic Variables

Variable	1991-1997	1999-2002	2003-2006
Change Rate of Labor Input (%)	1.9	2.9	0.5
Change Rate of Capital Input (%)	11.5	4.9	4.1
Change Rate of Sales (%)	15.8	6.3	6.9
Change Rate of Assets (%)	17.5	2.6	7.2
Change Rate of Labor Productivity (%)	4.8	4.4	3.1
ROA (%)	0.2	-0.1	0.8
Change Rate of Operating Profits (%)	5.8	5.1	6.1
Ordinary Margin (%)	1.7	1.5	5.9
Change Rate of Corporate Debt (%)	332.9	199.1	115.4
Government Debt / GDP (%)	6.1	16.5	25.4
Household Debt / GDP (%)	54.0	62.5	75.5
Exchange Reserves ($ 0.1 mil)	233.1	986.2	2,009.4
CPI (%)	5.8	2.5	3.0
BIS Ratio (%)	9.6	10.7	11.6

Source: SERI Report 2007

[7] The Bank for International Settlements (or BIS) is an international organization of central banks. The BIS requires bank capital/asset ratio to be above a prescribed minimum international standard to protect of all central banks involved. Its main role is in setting capital adequacy requirements. BIS ratio = [capital/assets]*100

Table 1.7 Debts of Business Groups in 1997

(Unit: million won)

	Business Groups	Number of Affiliates(97)	Debts in 1997	The Types of Corporate Restructuring
TOP 30 Business Groups	Daewoo	250	25,347	Workout (8.26.99)
	Kia	40	5,819	Legal Management (4.15.98)
	Ssangyong	75	9,004	Workout (11.1.98)
	Halla	36	4,501	Composition (3.20.98)
	Kohap	25	3,384	Workout (7.14.98)
	Donga	42	3,696	Legal Management (3.9.01)
	Jinro	32	1,443	Composition (2.3.98)
	Hanil	20	1,578	Legal Management (1.19.99)
	Anam	34	2,217	Workout (10.30.98)
	Haetae	37	3,254	Legal Management (4.11.01)
	Sinho	33	1,569	Workout (7.1.98)
	Dongil	18	1,373	Legal Management (4.23.99)
	NewCore	18	691	Legal Management (11.16.98)
	Dongkuk	24	1,091	Workout (10.27.98)
	Saehan	24	1,805	Workout (5.27.98)
	Gapul	23	832	Workout (7.24.98)
	Kupyung	20	1,960	Workout (7.23.98)
	17 Groups	731	67,604	
TOP 31-63 Business Groups	Pucksan	20	1,064	Workout (8.14.98)
	Daenong	26	1,137	Legal Management (12.30.98)
	Woobang	14	833	Workout (7.25.98)
	Susan	18	506	Legal Management (9.22.98)
	Kangwon	29	1,566	Workout (7.28.98)
	Chungoo	20	750	Legal Management (8.17.98)
	Saepung	10	531	Workout (7.24.98)
	Bosung	12	543	Workout (5.6.98)
	Jindo	24	807	Workout (7.23.98)
	Sinwon	26	870	Workout (7.24.98)
	Nasan	20	881	Legal Management (7.14.98)
	Kukdong	19	899	Legal Management (7.6.98)
	Daedong	9	334	Composition (3.22.98)
	13 Groups	969	77,991	
		998	80,284	

Source: BAI, KDI Report 2007

1998 saw the start of corporate restructuring with public funds worth 64 billion Korean won. As shown in Table 1.7, 17 out of the top 30 business groups and 13 out of the top 31 to 60 business groups underwent corporate restructuring. The corporate

restructuring consisted of three different kinds of restructuring processes. According to Korean commercial law, when a company cannot afford to pay debts or is in danger of bankruptcy, the company, creditors, or shareholders may file an application of court protection, called legal management. After the court's approval of the application, creditors cannot have an obligation satisfied until the court decides. In short, legal management refers to the court's supervision or management on behalf of the company. Composition refers to a voluntary agreement or contract entered into between creditors and debtors which would modify the amount due or the amount of loan, especially when the company is in danger of bankruptcy. In this case, for composition to be enforceable, the court has to ratify the agreement submitted by the company.

In those days, insolvent businesses were handled primarily by means of the Big Deals[8] between Chaebols and/or workouts.[9] The main features of the structural reform in the business sector were summarized in the five rules, to which President Elect Dae-Jung Kim and the leaders of the top 4 Chaebol groups agreed in January 1998: (i) enhancement of the transparency of business management, (ii) elimination of mutual guarantee (guarantee of obligations), (iii) drastic improvement of financial structure, (iv) concentration of competency on core businesses and reinforcement of cooperation with medium businesses, (v) reinforcement of the responsibilities of the controlling shareholder and the CEO. Also there were three tasks announced in the supplement thereof in August 1999: (i') improvement of the corporate governance of the nonbank depository institutions, (ii') suppression of circular equity investment among affiliates and blocking of improper insider trading, (iii') prevention of irregular inheritance and donation. Conventionally, these five rules and three tasks are called the '5 plus 3 rules'

[8] Big Deals are the government-backed plans in Korea after the Asian crisis. For example, a Big Deal was that Samsung conglomerate was forced to sell its car unit to Daewoo in return for acquiring Daewoo's electronics business by one of the government-backed plans.
[9] Workout refers to a series of activities which would improve the financial status of the company on the initiative of the creditors, usually banks.

in Korea. These rules are contained in amendments of the Commercial Act and the Securities and Exchange Act. Table 1.8 shows the time line of the amendments.

Table 1.8 Time Line

		1st	2nd	3rd
The	Submitted	7.7.98	11.12.99	12.31.00
Commercial	Passed	12.2.98	12.7.99	6.28.01
Act	Promulgated	12.28.98	12.31.99	7.24.01

		1st	2nd	3rd	4th	5th	6th
Securities	Submitted	8.23.97	2.9.98	4.29.98	12.2.98	11.22.99	12.21.00
& Exchange	Passed	12.29.97	2.14.98	5.15.98	12.29.98	12.16.99	2.28.01
Act	Promulgated	1.8.98	2.24.98	5.25.98	2.1.99	1.21.00	3.28.01

Table 1.9 shows the result of the improvement of the financial structure of 23 Chaebols included in the top 30 Chaebols in 1999 and 2000 consecutively. The total

Table 1.9 Financial Status of Chaebols

(Unit: trillion won, %)

		Equity(A)	Debt(B)	(B/A)
1st-30th Chaeblos	1998	79.2	287.3	363.2
	1999	141.9	232.9	164.1
	change	62.7	-54.4	-199.1
1st-4th Chaebols	1998	53.1	174.6	328.8
	1999	96.5	141.2	146.3
	change	43.4	-33.4	-182.5
5th-30th Chaebols	1998	26.1	112.7	433.4
	1999	45.4	91.7	201.9
	change	19.3	-21	-231.5

Source: Fair Trade Commission

capital of all these companies increased, and the total debt decreased. As a result, the debt ratio for groups ranked 1st to 30th decreased by 199.1 points, for the top 4 Chaebols by 182.5 points, and for groups ranked 5th to 30th by 231.5 points.

Along with these '5 plus 3 rules', efforts to improve corporate governance continued. The gist of the Chaebol reform was to reinforce the rights of shareholders, and eradicate debt guarantees among the affiliates within a Chaebol. To reinforce the rights of shareholders, the conditions for the exercise of shareholder rights were eased continuously as shown in Table 1.10. For example, the first row shows that the Commercial Act required 5% of shares to exercise derivative suit before December 1998 and lowered the minimum required shares to 1% in December 1998. It changed again to 0.5% if a firm has assets more than a trillion won in April 1999. The Securities and Exchange Act (SEA) regulates the listed companies both on the KSE and the KOSDAQ, while the Commercial Act regulates all companies. Thus, for the listed companies the SEA changed the minimum required shares to 0.5% in February 1998 and to 0.01% in May 1998.

Table 1.10 The Minimum % of Shares to Exercise Shareholder Rights

(Unit: %)

	The Commercial Act			The SEA	
Shareholders' Right	before	Dec. 1998	Apr. 1999	Feb. 1998	May. 1998
Derivative suit	5	1	1(0.5)	0.05	0.01
Right to Injunction	5	1	1(0.5)	0.5(0.25)	0.5(0.25)
Proposal Right	_	3	1(0.5)	1(0.5)	1(0.5)
Right to Demand a Removal of Directors, Auditors, or Liquidator of the Company	5	3	1(0.5)	0.5(0.25)	0.5(0.25)
Right to Demand Extra Meeting of Stockholders	5	3	3(0.5)	3(1.5)	3(1.5)
Right to Inspection of Accounting Book	5	3	3(0.5)	1(0.5)	1(0.5)
Right to Inspection of Business and Financial Status of the Company	5	3	3(0.5)	3(1.5)	3(1.5)
Right to Request of Dissolution of the Company	_	_	10	_	_

Numbers in ( ) are for the firms which have assets more than a trillion won
SEA: Securities and Exchange Act

Source: KDI

In 2000 Korea overcame the economic crisis and began to restore stability. In the business sector, the sluggish investment of enterprises began to be recognized as a new problem, and the structure of the Chaebols was weakened due to the increased inflow of foreign capital following the amendment of related laws and regulations and continued Chaebol reform policies. Figure 1.2 and 1.3 below represent the GDP growth rate[10] before and after the crisis and investment respectively.

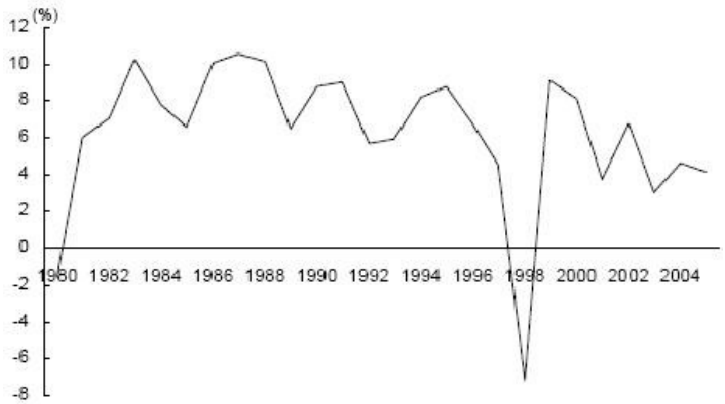

Figure 1.2 GDP Growth Rate
Source: KDI Report 2007

[10] Denominated in won.

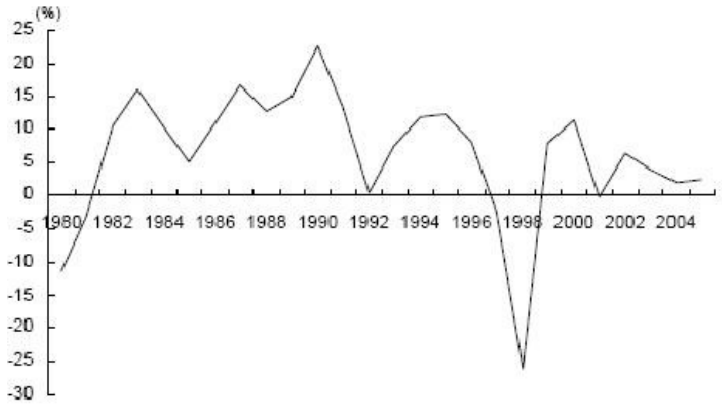

Figure 1.3 Change in the Rate of Investment
Source: KDI Report 2007

Prior to the crisis, the financial health or corporate governance of the Chaebols was treated as problematic. Nevertheless, as they could raise required funds by borrowing from banks, the level of responsibility for management failure through the market mechanism was low, but the reforms following the crisis alleviated this problem. As the possibility of hostile takeovers by foreign companies was now open, failed CEOs found it hard to maintain their right of management, and as the economic systems favorable to the Chaebols were changed after the Asian financial crisis, the Chaebols became less likely to continuously grow while maintaining the form of family businesses. In addition, as the transparency of business management was emphasized, the Chaebols were required to prepare consolidated financial statements, `Accounting Standards' were revised in compliance with international standards, and listed corporations were required to appoint nonexecutive (outside) directors. To reinforce the responsibility of the controlling shareholder, a new clause was added to

consider those who act as directors to be directors regardless of their holding the title of director, and to hold them responsible.

As examined above, the financial crisis in Korea accelerated the liberalization and opening of the Korean economy, and seen from the perspective of corporate governance, Anglo-American corporate governance was benchmarked, several legal systems related to corporate governance were improved, and there was a considerable level of change. The following sections will examine the literature related to corporate governance, and the changes in the legal systems related to corporate governance in Korea.

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CHAPTER 2

CORPORATE GOVERNANCE AND FIRM VALUE IN KOREA

Abstract

In Korea, corporate governance has been a controversial issue for the last ten years. The Korean government and the International Monetary Fund agreed that some specific corporate governance structures in Korea, like the Chaebols, aggravated the negative effects of the Asian financial crisis. Thus the government passed a series of laws and created institutions to improve corporate governance. This chapter examines how corporate governance affects firm value using Korean market data after the Asian financial crisis. One core empirical problem in this kind of study is how to deal with the endogeneity problem since corporate governance is an endogenous variable which firms can choose to increase their value. We consider the Asian crisis as a natural experiment and analyze the effect of changes in the laws regulating corporate governance on firm value. The results show that the reform of corporate governance led to positive abnormal returns.

1. Introduction

Corporate governance is a mechanism for controlling and monitoring a corporation. It is a popularly debated issue in academic, corporate management, and political forums. Ownership structure, which is a different concept than corporate governance, usually means how the company's shares are distributed. As ownership is dispersed in most advanced corporations in modern times and ownership structure is different from management control, the issue of corporate governance becomes important. Shareholders provide equity capital to the corporation, and the management of the

corporation is delegated to professional management, therefore the issue of management control is about the power of representation which comes from the separation of ownership and control. As shareholders are residual claimers, they need mechanisms to supervise the management of the company to represent the interests of shareholders who do not participate in the management of the company directly, and these mechanisms are called corporate governance.

In Korea the issue of corporate governance has been constantly raised together with the issue of reforming the unique type of conglomerate called `Chaebols'. A typical Cahebol consists of many diversified and legally independent affiliates, all of which are controlled by a controlling shareholder family.[11] It is true that the Chaebols have played a positive role in the growth of the Korean economy, which was devastated by the Korean War in 1950, through the exercise of their powers together with aggressive investments and prompt decisions by the founder or his family members of the conglomerate in the early days of growth of the Korean economy. The current environment for corporations and the economy, however, has significantly changed as compared to the beginning stages of economic growth in the 1960s--1970s. Now there is fierce global competition for survival among corporations. In this extremely competitive business environment, the time has come to establish sound corporate governance in corporations; otherwise it will be very difficult for them even to survive.

Discussions about corporate governance in Korea, including government policies toward it, are somewhat different from those in general analyses often pertaining to other countries such as the U.S. Whereas discussions on corporate governance in general are focused on the reduction of the power of representation of management in

[11] Hwang and Seo (2000)

corporations where ownership is decentralized, in the case of Korea, the discussions are more concentrated on the power of representation by controlling shareholders at a group level rather than the power of representation by professional management in the case of stand-alone corporations. The reason why we pay special attention to the Chaebols in this discussion on corporate governance is because of the emergence of controlling minority shareholders.[12]

It is very common in Korea that the founder of a Chaebol or his family actually holds the management right on corporation, but there are many instances where the ratio of the shareholding by the founder, including his family, is not so high,[13] which means that the founder and/or his family exercises more management of the corporation than the level of their ownership. As they hold equity, their interests pursuant to the exercise of governance rights will coincide with that of other shareholders as compared to the interest of professional management,[14] but they can pursue private benefits through the exercise of their governance rights while bearing less of the relevant risks. Therefore, in cases where the private benefit which is expected from the exercise of their governance right is bigger than the anticipated disadvantage due to ownership, they can influence a decision in their favor and interest at the expense of other shareholders taking the risk of a reduction in the value of the corporation by the decision.[15]

When the Asian financial crisis hit many Asian countries in the late 1990s, South Korea was one of the most affected ones. On December 3, 1997, the Korean government had no choice but to accept an IMF relief loan to solve the extreme shortage of foreign exchange liquidity and simultaneously the Korean market was

[12] How this is possible is explained later in this paper.
[13] Shown in Figure 3.3
[14] Jensen and Meckling (1976)
[15] Bebchuk et al. (2000)

opened full scale, which led to a situation where Korean corporations had to face merciless international competition. The government recognized the problem of a Chaebol-centered national economy and thus concentrated on implementing a legal and institutional framework particularly focusing on the improvement of corporate governance of Chaebols. After the crisis, corporate governance in Korea improved remarkably, although it still needs further improvement.

Then, the next question will be what constitutes "good" or positive corporate governance. One answer to this could be found in the OECD (Organization for Economic Cooperation and Development) Principles of Corporate Governance. The representatives of twenty-nine OECD member countries passed the OECD Principles unanimously in May 1999.[16] Since then, these principles have been accepted as a model for corporate governance by global enterprises and investors. According to these principles, the corporate objective is to maximize return to its shareholders and to achieve long-term prosperity of the business. In order to accomplish this objective, these principles delineate various obligations and rights such as public announcement, transparency, audit, ownership and responsibilities of shareholders, and the obligations and rights of the board of directors. However, one might question whether this kind of uniform regulatory guidelines, which does not consider the characteristics of individual corporations, can be beneficial to all corporations regardless of their individually different situations.

Chhaochharia and Grinstein (2007) pointed out this possibility and reported their results that suggest that some provisions are detrimental to small firms while beneficial to large firms. They analyzed the impact of the Sarbanes-Oxley Act of 2002 and various amendments to the regulations on stock exchanges. One of their main findings is that large less compliant firms earned positive abnormal returns, but small

[16] The Principles were revised in 2004 again.

less compliant firms earned negative abnormal returns after the rules were announced. Lately this possibility has drawn some scholars' attention in Korea.

The purpose of this chapter is to see whether some of these provisions could harm a specific group of firms which have the same characteristics. We divided our sample into two groups, firms in a Chaebol and firms not in a Chaebol, and large firms and small firms. Then we conduct the same analysis twice, one for each group.

Section 2 introduces related literature about corporate governance. Section 3 demonstrates the unique corporate governance environment in Korea. Section 4 summarizes the corporate governance reforms in Korea since the crisis. Section 5 mentions an alternative view of corporate governance. Section 6 explains our methodology and describes our data. Section 7 reports the results, and Section 8 concludes.

2. Related Literature

Interest in and research on corporate governance spread across the globe for the past 20 years to such an extent that it could be called explosive. The literature cites the following reasons for its unprecedented emergence as a global topic. For starters, in the U.S. of the 1980s and Europe of the 1990s, takeovers were so prevalent that people called it the age of the hostile takeover, and it created arguments between businesses trying to defend against hostile takeovers and scholars. Privatization, which started in the U.K. and became a worldwide phenomenon, was another reason for the increased interest in corporate governance along with the attempt to pursue shareholder democracy. Eastern Europe was deregulated, foreign investment rose due to the capital market consolidation of the European Union, and thus interest in corporate governance increased for the purpose of protection. Also, the scandals of major American

corporations, as exemplified by the Enron scandal and others, were also a reason for the increased interest in corporate governance.[17] On top of these worldwide trends, the Asian financial crisis of 1997 in Korea sparked an unprecedented level of interest in corporate governance in various sectors of society. The domestic and overseas consensus that weak corporate governance, such as the weak investor protection in the emerging markets, further aggravated the financial crisis and prompted government, business, and academia to engage in several tasks to realize desirable corporate governance.

The basic framework of this corporate governance theory is the agent (manager) and principal (shareholder) framework. Berle and Means 1932,[18] called a classic in corporate governance, construed an enterprise as the relationship between a controlling manager and minority shareholders with innumerably distributed ownership. It was quite a natural assumption in the U.S. as many canal and railroad construction projects were actively carried out in those days.[19] Thus their research stimulated managerialism in the 1970s. However, things have changed since.

Jensen and Meckling (1976) who led the development of modern corporate finance consider firms that have not a dispersed ownership but a concentrated one. They focused on the relationship between upper-level management and shareholders. Their main thrust is in explaining the ownership structure of the firm as an institution designed to limit agency costs. Grossman and Hart (1988) provided the sufficient conditions for the one-share-one-vote rule to be optimal when appointing management, which is the most efficient way to avoid the agency problem. Harris and Raviv (1988) showed that the one-share-one-vote rule is socially optimal. For the last two decades, many empirical works have tried testing their arguments. La Porta et al. (1999) studied

[17] Becht, Bolton and Roell (2002), Corporate Goverance and Control
[18] The Modern Corporation and Private Property
[19] Learmount (2002), Corporate Governance

30 companies for each of 27 countries to test if companies have the Berle and Means ownership structure and report that there are many companies which do not have a completely dispersed ownership structure.[20] One of their findings says that Germany and Austria are the countries which have the highest percentages, 20% and 15% respectively, of cross-shareholding among subsidiaries in their samples. Later, Claessens et al. (2000) utilize the data of 2,980 firms in 9 East Asian countries and report their ownership structure. These empirical papers showed that there existed significant ownership concentration in developed countries[21] and even more concentration in developing countries.

Since the Asian crisis, many economists have studied Korean corporate governance. Baek, Kang, and Park (2004) studied the Korean economy during the crisis and reported that firms with high external ownership concentration experienced a smaller reduction in share values. Black, Jang, and Kim (2006) constructed a corporate governance index (KCGI, 0~100) using survey data for 515 Korean companies based on a 2001 KSE survey and report strong evidence that shows this index plays an important role in determining the firm value.

3. The Corporate Governance Environment in Korea

Corporate governance in Korea has significantly changed in its systematic as well as substantial aspects since the Asian crisis. Before the crisis, external shareholders' actual participation in the management of a corporation was difficult due to the constraints on the shareholders' rights. Also corporations procured the necessary operating funds of the corporation through indirect financing instead of issuing of

[20] They used the term, Berle and Means Corporation, to indicate the firms which have a completely dispersed ownership structure.
[21] Edwards and Fischer (1994)

shares in the stock market. Therefore it was not so meaningful to properly cope with corporate governance problems to raise funds on the stock exchange. Also the management of the corporation focused more on the expansion of their line of business and the size of the corporation through investments in new businesses rather than returning the profit of the corporation to shareholders as dividends. The board of directors, which consists of the officers of the company, is not an organization which can actually make reasonable resolutions but it serves the function only of confirming the decisions of the management of the company. As there is no threatening element to the management's control due to the legal prohibition against holding a large quantity of shares, there has been no means to regulate the management of the company and corporate performance by the market or the board of directors. Moreover, transparency of management and the protection level for investors was quite poor.

Given this situation before the crisis, the improvement of corporate governance was necessary not only from a political but also from a strategic dimension for the survival of corporations. Considering the fact that discussions on corporate governance were very active in the 80s in the U. S. and in mid-90s in OECD, it is believed that the recognition of the importance of corporate governance in Korea is rather late. Regardless of whether there was to be autonomous improvement or heteronomous improvement due to the financial crisis, it was inevitable that Korea had no alternative but to implement the IMF Guidelines such as the enhancement of management transparency, reinforcement of shareholders' rights, reinforcement of responsibilities of directors and management of the corporation, and activation of a governance market. Korea has certainly made considerable progress over the last 10 years.[22]

[22] Hwang (1999)

As stated above, the Chaebols' governance structure, especially the ownership-control disparity, has been considered to be one of the most problematic aspects of the Korean economy. Ordinarily, the issue of corporate governance stems from the fact that the manager has all the decision-making power (agency) and the owner has none, but as the controlling shareholders own the right of management in many `Chaebols,' the controlling shareholders have controlling power (agency) whereas the external shareholders have none. If the controlling shareholders control the company in proportion to their ownership, and own the cash-flow rights, agency between them is not likely to become a problem, but ordinarily controlling shareholders exercise greater control than in proportion to their ownership through circular equity investment and/or pyramid equity investment. Figure 2.1 illustrates how a small portion of equities can exercise large control in this equity investment structure.

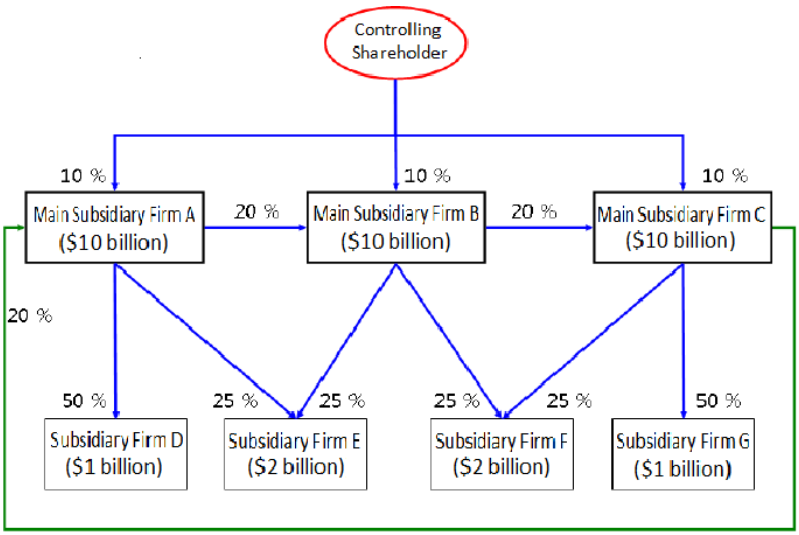

Figure 2.1 Cross Financing and Pyramid Structure (Chang 2003)
Numbers in ( ) are the value of the firms.

Suppose that a business group consists of three main subsidiaries A, B, and C, each of which has $10 billion in assets, and four subsidiaries, D,E,F, and G, which

have $10 billion, $20 billion, $20 billion, and $10 billion respectively in assets. The controlling shareholder owns 10% of the value of subsidiaries A, B, and C. There is a circular investment structure which illustrates that A owns 20% of shares of B, B owns 20% of shares of C, and C owns 20% of shares of A. Thus, these three firms can inflate assets without any additional net inflow. The controlling shareholder, who has only 10% of shares of each subsidiary, owns 30% of shares of A, B, and C and is able to control the three firms if they have dispersed ownership structure. For the same reason, the controlling shareholder can control the four small firms. As a consequence, the shareholder has control of the whole business group with only 8.3%[23] of shares.

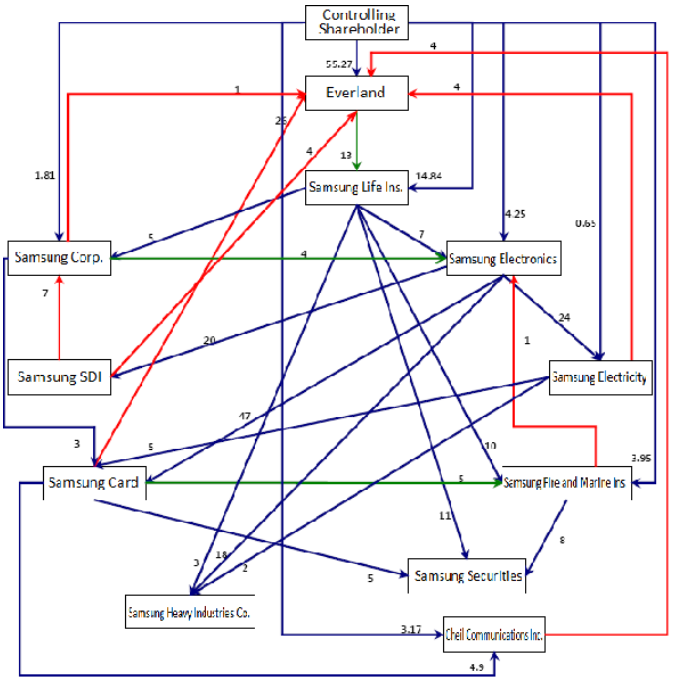

Figure 2.2 Samsung Group in 2006

Source: Kang, Bin, Cho, and Yoon (2007)

[23] [The controlling shareholder's investment/The total investment]*100=[$3 billion/$36 billion]*100=0.083

Figure 2.2 demonstrates the real corporate ownership structure and governance structure of Samsung group, one of the biggest Chaebols in Korea.[24] The figure shows only major affiliates out of 59[25] in the Samsung Group. Nevertheless, the ownership and corporate governance have a complex form, i.e. the pyramid equity investment based on the circular financing between affiliates. Affiliates belonging to the group are entangled in the complex ownership and corporate governance through equity investment in affiliates. The numbers in the figure indicate their shares in the affiliates, and the controlling shareholders are the controlling shareholder, the relatives of the controlling shareholder, group executives, and nonprofit corporations. This figure is recited from the figure included in Kang, Bin, Cho, and Yoon (2007) based on the data released by the Fair Trade Commission in 2006. The Fair Trade Act is regulating equity investment in affiliates through the rule of the ceiling on the total amount of shareholding of other domestic companies, based on the assumption that equity investment in affiliates is the cause of ownership-control disparity. Bebchuk et al. (2000) reported that ownership-control disparity strengthens the control of the controlling shareholder more than their ownership so that it effectively weakens the market regulation of controlling shareholders, particularly, the regulation from the market for corporate control.[26]

The following Figure 2.3 shows the ownership structure of the Chaebols which have a controlling shareholder and are one of the top 30 firms. The average percentage of shares which the controlling shareholder's family has is about 11% and the percentage of shares which the controlling shareholder has is about 3.7%. In contrast the Chaebols' affiliates own more than 50% of shares. Thus it is possible for the

[24] Kang, Bin, Cho, and Yoon (2007)
[25] The number of affiliates of Samsung was 80 in 1997, but it decreased to 61 in 1998. It is 59 as of 2008.
[26] Kim et al. (2003)

minority controlling shareholder to control the company through the shares of the affiliates.

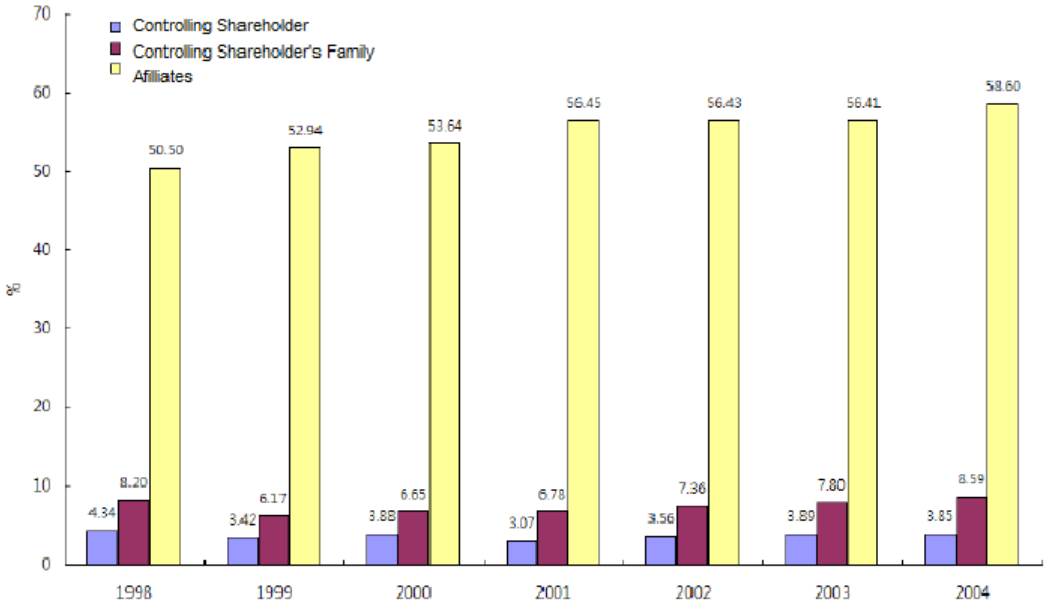

Figure 2.3 Ownership Distribution

Source: Kang, Bin, Cho, and Yoon (2007)

4. Corporate Governance Reform in Korea

The efforts to improve corporate governance in Korea took the form of the government-led amendment of relevant laws and regulations in the years following the Asian financial crisis of 1997. The Commercial Act was amended three times with respect to corporate governance. As the need to cope with the Asian financial crisis and to restructure the economy rationally emerged, the Commercial Act was amended in 1998 for the purpose of simplifying the merger process and introducing the corporate division system in a bid to help corporate restructuring. It also reinforced the rights of minority shareholders and introduced the cumulative voting system in an

effort to monitor management activities, and reinforced the responsibilities of CEOs and guaranteed the transparency of management. As globalization increased in the age of global competition, the Commercial Act was amended in 1999 in order to reinforce the function and role of the board of directors to improve the efficiency of corporate management, and it introduced the audit committee system to guarantee the transparency of business management and improved the method of operating the general meeting of shareholders and the board of directors. This amendment was intended to promote sound corporate development and ultimately reinforce the global competitiveness of enterprises by improving corporate governance. The Commercial Act was amended in July 2001 to expand the scope of the resolutions made by the general meeting of shareholders, improve the board of directors system and reinforce the right of shareholders' preemptive rights in order to enhance the transparency of business management and reinforce global competitiveness. The purpose was to improve corporate governance and introduce the stock swap and transfer system for the establishment of holding companies to support corporate restructuring.

The corporate governance reforms after the Asian crisis can be largely divided into three parts: the reinforcement of an internal control system, the reinforcement of an external control system, an audit system, and creation of more transparency of corporate management through the disclosure system.

Regarding the internal control system, the role of outside directors in leading to reasonable resolutions of the board of directors was emphasized. As the criticism mounted in early 1998 immediately after the Asian financial crisis to the effect that the inability of the board of directors to oversee management resulted in insolvent operations, the government introduced the outside director system to ensure that outside directors play a leading role in the decision-making process of the board of directors so as to enhance the fairness and transparency of corporate management. The

intrinsic function of the board of directors is to appoint management, and make corporate decisions about the conduct of business, and oversee and supervise the conduct of business. However, the CEO, the controlling shareholder, holds sway over the board of directors and manages the company in an autocratic manner, thereby greatly detracting from the interests of ordinary shareholders. The non-executive director system allows outside directors independent of management to participate in the board of directors, the decision-making body of the corporation, in order to prevent the arbitrariness of the controlling shareholder and thus it performs the duty of internal control.

The election of outside directors was legally required for all listed companies in the Korean Stock Exchange. The International Monetary Fund requested a law requiring the election of outside directors to enhance the transparency of corporations, and in February 1998 all listed corporations in KSE were required to elect outside directors for more than one quarter of the total number of registered directors through the revision of the Regulation on the Listing of Securities.[27]

Also, pursuant to the revised Securities Exchange Act in 2001, the listed corporations in the KOSDAQ had the same obligation. Also, the firms which have more than 2 trillion won as their assets are required to elect outside directors for more than half[28] of all the registered directors.[29]

There was a separate regulation for listed corporations or financial institution with asset sizes of more than 2 trillion won, enacted in 2000 and the regulation stipulated that the number of outside directors should be more than 1/2 of the board of directors.

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[27] The Regulation on the Listing of Securities, 48-5-1

[28] Three outside directors is the minimum requirement. Thus, firms should elect at least three outside directors even in the case that the half of the number of directors is less than three.

[29] The Exchange and Securities Act, 191-16-1 and the Enforcement Decree of the Exchange and Securities Act 84-23-2. The Article 45-5-2 of the Securities Listing Regulation. Refer to Lee and Oh (2001) for detailed contents on the legislation of outside directors in "the Revision of the Security Listing Regulation" dated February 21, 1998, Korea Securities Exchange.

Also the regulation required establishing an Audit Committee which consists of more than 2/3 of outside directors including the chairman of the committee. The installation of an outside director recommendation committee was legally required and the voting rights of major shareholders were limited to less than 3% at the time of election of an outside director who is an auditor of the corporation.

Another important change of the internal control system, in addition to the non-executive director system, concerns the responsibilities of the largest shareholder. Characteristically of the Korean Chaebols, the boss is the largest shareholder and actually controls the corporation. The government attempted to get rid of the practice of the head of a Chaebol bearing no legal responsibilities for the result of exercising absolute influential power over the management of the business group by newly enacting the provision on the responsibility of persons involved in work execution (Director in fact) in the Commercial Code, and internal control system was reinforced by newly enacting the director's duty of loyalty.

In order to strengthen the right of minority shareholders, this amendment loosened the requirements for the exercise of shareholder rights, reinforced the private means of remedy for shareholders, and permitted the shares held by trust accounts to exercise voting rights. The requirements for the exercise of the rights of minority shareholders such as the rights for filing lawsuits for the representative, the right to read company records, a cumulative voting system, and a shareholder suggestion system at the time of electing directors were newly enacted while also allowing the exercise of proxy voting rights for stocks held in trust account by banks and trust companies to enhance the role of institutional investors, namely abolishing the shadow voting system. And also a series of laws were enacted that lowered the minimum percentage of shares required to exercise various shareholder rights such as the right to file an injunction with the court barring the directors proposed action, right for dismissal of the director,

auditor and liquidator, right to convene an extraordinary general meeting of shareholders, right to read the corporation's accounting records, and right to claim for an audit of the corporation's work and property state.

To reinforce the external control system, flexibility of the management market was enhanced through the activation of M&A, the obligatory open purchase system was abolished to reinforce the control on corporate management, the set-up of exclusive M&A funds was allowed, foreigner's stock investment limits were abolished, and the requirements for obtaining agreement of the board of directors was lowered. Also, the scope of foreigners' investment in the stock markets which needed government's[30] approval was shrunk. The amount of foreigners' shares which requires the agreement of the board of directors was mitigated from 10% to 33%.

As shown in Table 2.1, the process of opening the capital market in Korea began in the early 1990s. On January 3 in 1992, the stock market was partially opened to foreign investors. On May 25, 1998, it allowed foreigners to buy any amount of stock except in government-owned corporations. There still was a limit on foreigners' stock acquisition in government-owned corporations. Foreigners were not allowed to buy more than 30% of the stocks. However, foreign investors could acquire the stocks of non-government-owned corporations up to 100%.

[30] The Minister of Finance and Economy. In 2008 the Department changed its name to Ministry of Strategy and Finance.

Table 2.1 Limits on How Much Owned by Foreigners

(unit: %)

year	1992	1994	1995	1996	1996	1997	1997	1997	1997	1998
month.day	1	12	7	4	10	5	11	12.1	12.3	5
by stock										
non-government-owned firms	10	12	15	18	20	23	26	50	55	_
government-owned firms	8	8	10	12	15	18	21	25	25	30
by individual										
non-government-owned firms	3	3	3	4	5	6	7	50	50	_
government-owned firms	1	1	1	1	1	1	1	1	1	3

In the year 1992, when the securities market was opened, the total market value of listed stocks in the KSE was 85 trillion won but in 1999 it was increased to 350 trillion won. Foreigners held only 3% of the market value of the listed companies in 1992 as shown in Table 2.4. Since then it has increased and it reached 20% of the market value (or 12% of the shares) of the listed stocks in 1999. As shown in Figure 2.5, the ratio of shares which foreigners own in the KSE in February 2008 is about 32% which has decreased by 12% points compared to the ratio in April 2004. However, the market values of the stocks foreigners own have increased through 2007 as shown in Figure 2.5.

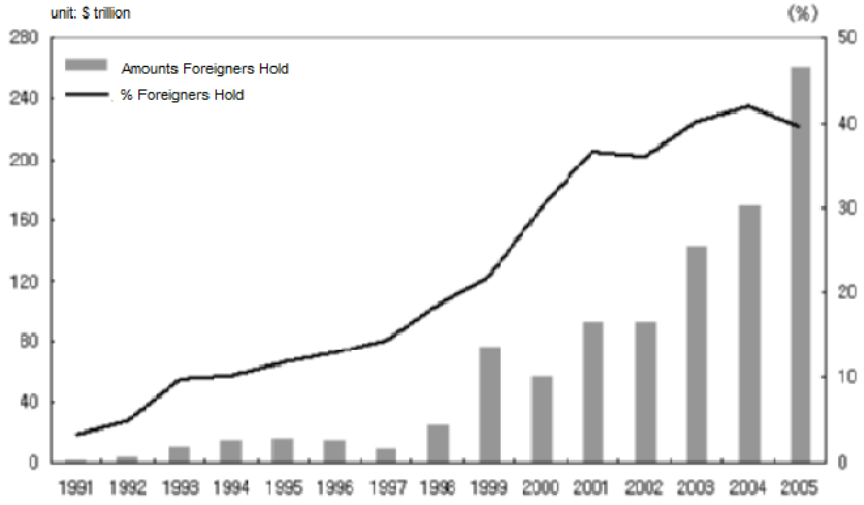

Figure 2.4 Stocks Owned by Foreigners

Source: KDI Report 2007

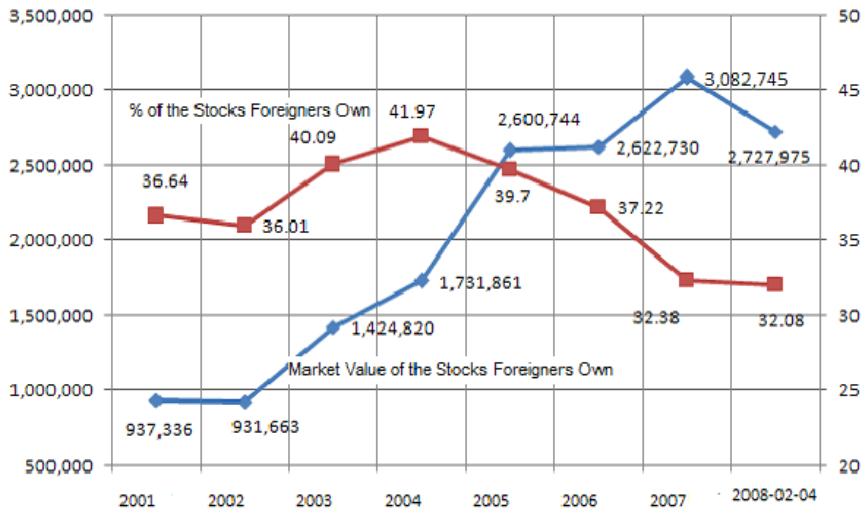

Figure 2.5 Stocks and Market Value Owned by Foreigners

Source: GCGC Report

The following Table 2.2 reports ownership distribution in Korea in 2006.

Table 2.2 Ownership Distribution in 2006

Investors	% of Shares
Foreigners	37.26
Institutional Investors	21.96
Company Investors	18.55
Individual Investors	17.90
State	4.29

Source: KSE

The high liability ratio and non-transparent management by the Chaebols deteriorated the credit ratings of Korean corporations in the international financing market, and after the crisis, the deteriorated rating served as a factor for the collection of financings and investments by international financial institutions and foreign investors. The government implemented market-centered reformation to enhance management transparency and corporate governance by the Chaebols by imposing an obligation to prepare combined financial statements for large-size conglomerates. Unlike the consolidated financial statements which include the financial data of the subsidiaries only, the combined financial statements must include the financial data for all the affiliates in the business group which are in fact controlled by the head of the Chaebol.

The scope of the business groups under control changed little by little, depending on the relevant government regulations over the years. Prior to 2003, 30 business groups referred to the top 30 business groups announced by the Fair Trade Commission each year, but afterwards the Commission classified business groups into those groups for whom cross-shareholding is restricted, those groups subject to the ceiling on the total amount of shareholding of other domestic companies, and those

groups for whom guarantee of obligations is limited. The conglomerates subject to the combined financial statement includes all domestic affiliates and overseas affiliates which belong to the conglomerate as of the basis date for the preparation of the combined financial statements. In the combined financial statements, investor's equity as well as investee's equity among affiliates must be announced publicly as the status of mutual equity investment among affiliates within the same conglomerate group.

In accordance with international accounting standards, the corporate accounting standard was revised and the government's supervision of the accounting audit was reinforced so that a corporation's management situation and risk level are exposed to market evaluation. In December 1998, in order to get rid of distrust of domestic corporation's financial statements, the local corporate accounting standard was significantly revised based on international accounting standard and the American accounting standard. These changes included expansion of valuation of present value of credit and liabilities, prohibition of profit manipulation through accounting changes, clarification of accounting treatment of derivative products and reinforcement of public announcement on the notes. In order to minimize the possibility of fraudulent accounting, a group lawsuit for external auditors was allowed, the relevant penalty was adjusted upward, an internal accounting control system was introduced, the laws related to the advancement of the accounting system was revised in 2003, and CEO's and CFO's obligations to certify the announced financial documents were intensified while reinforcing the independence of audit by accounting firms and restricting the consulting business of accounting firms. The Korea Securities Supervisory Service also adopted the fair public announcement system of America Securities Supervisory Board and implemented a fair public announcement system from December 2002. In April 1998, reciprocal guarantees between affiliates which belong to the same Chaebol were prohibited.

5. An Alternative View of Corporate Governance

As examined above, considering the situation prior to the Asian financial crisis, the internal and external call on the improvement of corporate governance was inevitable. As a result of the measures taken, the corporate governance of Korean companies during the past decade made considerable progress both in appearance and substance. However, there are differing opinions as to whether the degree and direction of government intervention to affect this progress was desirable. In recent years the academic community has begun to rethink whether these policies were beneficial and appropriate by taking into consideration the political and historical environment of Korean companies.

First of all, what the IMF and the Korean government took to be "desirable" corporate governance is itself based on Anglo-American corporate governance practices. The Anglo-American corporate governance practices involve widely dispersed stock ownership, corporate governance by professional managers, reinvigoration of the market for corporate control, and types of corporations whose primary objectives are higher stock prices and increased amounts of dividends. This type of corporate governance dominates the market in the U.S. and the U.K. However, most European countries[31] and Asian countries,[32] including Japan, have a different type of corporate governance.[33] Recently many scholars in Korea, who have evaluated the decade in the wake of the Asian financial crisis, are asking whether Korea should

[31] In many European countries, the role of the board of directors has not been stated in law and shareholder utility maximization is not the only goal of the board of directors. The legal system in Germany and Austria requires balancing the rights of shareholders and employees (stakeholders).
[32] In most Asian countries, the level of shareholder protection is low and large business groups are prevalent.
[33] La Porta et al. (1999) and La Porta et al. (2000)

blindly follow only the Anglo-American corporate governance practices and whether they are optimal for Korean corporations.

The difference in corporate governance between different countries essentially stems from the difference in ownership structure and reflects the political and historical differences in how the companies were formed. Some in academic circles believe that there is desirable corporate governance common to all companies and view the Anglo-American practices as such. They propose a convergence theory and argue that all corporations adhere to these practices. On the other hand, others advocate alternative theories, such as the path-dependence theory, and the political dynamics and historicity theory, that is, that corporate governance is the result of reflecting the different political and historical environments of individual countries and coping with it.

Kraakman et al. (2004) argue that corporate governance can be divided into four kinds. The first is the manager-oriented model which can be seen in the U.S. and the U.K. supported by Berle and Means (1932). The second type of corporate governance is the labor-oriented model in Germany. The third and fourth types are the state-oriented model in Asia and the stakeholder-oriented model respectively. They also argue that these different governance structures are converging to the shareholder-oriented model.[34]

Over 10 years have passed since the crisis. Now Korean academics are taking interest in these alternative theories because of several problems that have come to light over the years. Recall that the belated awakening to the importance of corporate governance was attributed to the problems with the corporate governance of the Chaebols. Korea attempted to solve these problems by replacing this governance with Anglo-American practices. However, internal corporate governance and strategic

[34] This type of corporate governance is prevalent in the U.S. and the U.K.

decision-making was not based on coordination of interests of stakeholders to suit the environment facing each company. Rather, the government directly intervened and enforced uniform regulation on the Chaebols. In actuality, it might have been more desirable if this improvement of corporate governance and securing of management transparency had avoided dependence on government regulation, and had been based on the coordination of the interests of market participants.

A few studies[35] have pointed out the problems of uniform regulation by examining equipment investment rates. Shin (2005) reports that equipment investment rates exceeded the economic growth rates prior to the Asian financial crisis, and this investment served as the driving force behind the growth of the Korean economy. However, the annual growth rate of corporate investment has dropped to less than 3% since 2001, far less than the economic growth rate of 4.5% between 2001 and 2005. He attributes this drop in the corporate investment to the change in corporate governance.

More recently, Sovereign's attack on SK in 2003, Hermes' attack on Samsung C&T in 2004, and Icahn's attack on KT&G in 2006 amplified the domestic interest in the market for corporate control, and directly sparked discussion of hostile takeovers. As it was impossible to take over the right of management in Korea before the Asian financial crisis due to the rule which regulated the upper level of shares that foreigners could own, no defense mechanism against hostile takeovers was necessary. However, the obligatory takeover bid system and the ceiling on foreign investment were abolished in the post-IMF improvement process. As shown in Figure 2.4, the percentage of shares which foreigners own has been rapidly increasing since 1998. Also, Table 2.3 represents the percentage of shares of individual companies foreigners own as of May 2008.

[35] Jinyoung Shin (2005), Kiseok Hong (2006)

Table 2.3 Percentages of Shares Owned by Foreigners in May 2008

Ranking	Company	% of Shares
1	Namyang Dairy	98.27
4	Korea Exchange Bank	81.25
5	Samsung (P)	80.61
6	SK (P)	80.57
8	Kukmin Bank	79.06
11	Hyundai Auto (P)	74.48
12	LG Electronics (P)	74.09
15	Hite Brewery	70.79
17	Ssangyong	69.63
19	Samsung Fire Insurance (P)	67.00
22	SK Energy (P)	64.15
24	Amore Pacific (P)	63.81
40	Samsung Fire Insurance	54.64
42	KT&G	53.26
50	SK Telecom	48.60
52	S-Oil	47.97
58	POSCO	46.52
59	KT	46.42
60	Samsung Electronics	46.07

Source: Yahoo Finance in May 2008
(P) means preferred stocks

As a result, the market for hostile takeovers of Korean companies is completely open, and there is no means of defending against such threats to the right of management. Corporations find themselves busy defending their right of management by repurchasing shares or swapping equities with friendly companies. Consequently, stock repurchases and cash dividends have increased rapidly, as shown in Table 2.4.

Table 2.4 Changes in Dividend Policy and Repurchase

(unit: million won)

Repurchase		Dividend	
2005	1950.2	2002	5884.6
2006	5333.4	2004	10140.9
2007	4620.2	2006	11692.2

Source: KSE

Thus, these days business circles are demanding reforms that would enable companies to defend themselves against hostile takeovers since the money for investment being spent on stock repurchase and dividends is weakening the growth potential of the firms. As shown in Table 2.5, many other countries allow hostile takeovers but also permit corporations to take defensive measures at the same time. In contrast, Korea allows hardly any of these defense mechanisms, although discussions are now underway to find ways to permit such defense mechanisms. However, some[36] argue that it will be hard for the Chaebols to defend against hostile takeovers considering their ownership structure[37] even if these mechanisms were allowed. In addition to this they insist that these proposed anti-takeover mechanisms are unnecessary because there has not been yet an actual hostile takeover case in Korea.

Table 2.5 Anti-Takeover Mechanisms

	U.S.A.	Japan	France	Korea
Report on Mass Holding of Stocks	Yes	Yes	Yes	Yes
Golden Share	No	Yes	Yes	No
Poison Pill	Yes	Yes	Yes	No
Additional Voting Right	Yes	Yes	Yes	No
Mandatory Tender Offer	No	No	Yes	No
Regulation on the Foreign Investment	Yes	Yes	Yes	Yes/No

Source: The Federation of Korean Industries

[36] KDI Report (2007) and Shin (2005)

[37] The average ownership ratio of controlling shareholders ia about 3.5%. So it is not likely for them to protect their control power against hostile takeover even though some of the mechanisms allowed.

6. Methodology and Data

The goal of this chapter is to analyze the impact of the reform of corporate governance on stock returns. The biggest problem in studying the impact of corporate governance structure change on firm value is that governance structure is an endogenous variable which corporations can choose. In other words, as corporations can choose governance structure to improve their firm value, it is difficult to derive any meaningful conclusion only on the basis of firm value and governance structure. However, the change in governance structure in Korea in the late 1990s was legally enforced by the government, and was not of their own accord. Accordingly, it should be possible to view the Asian financial crisis as a natural experiment and arrive at a meaningful conclusion.

As stated above, the Korean government and the IMF initiated the reform of corporate governance after the Asian crisis, and the reform focused on business groups called Chaebols. This chapter examines whether the reform of corporate governance had a greater impact on firms in business groups than those not in business groups. In addition to this, the empirical model examines the impact of the introduction of the outside director system.

This study measures the announcement effect of the laws and ordinances related to improvement of corporate governance. What makes it different than the standard event study method is that the event period is longer since the laws and ordinances were not promulgated and enforced at one time, but over years, especially in 1998 and 1999. Also, there is another reason that the standard event study method does not work. The change in corporate governance rules is not a firm-specific event but a event which can affect the whole market at the announcement time. Therefore, it is hard to assume that one firm's return would not be affected by another firm's return at the same time t.

In other words, the covariances of the returns across firms are not zero. Thus, this clustering problem should be considered. In this chapter, to take care of these problems, we adopted the portfolio approach which is recommended by Campbell, Lo, and MacKinlay (1997).[38] This method is to group firms under consideration into portfolios. Thus, we calculate the return of portfolio, P as follows:

$$R_{pt} = \frac{1}{N_{pt}} \sum R_{ipt}$$

R_{pt} is the return for the group p portfolio from t-1 to t. i stands for a stock which is in the portfolio p. N_{pt} is the number of stocks in the portfolio p at time t. Then, we obtain a time series of the equal weighted portfolio returns. The return of each interested portfolio is compared with a benchmark return. This is the main methodology of Greenstone, Oyer, and Vissing-Jorgensen (2006) and Chhaochharia and Grinstein (2007). Greenstone et al. (2006) report announcement effects of disclosure rules and Chhaochharia and Grinstein (2007) examine the impact of the Sarbanes-Oxley Act and various amendments related to corporate governance. These two studies use the following four factor model to calculate the benchmark return.

The four factors are the market ($R_m - R_f$), size (SMB), value (HML), and momentum factors (MOM). The market factor controls the abnormal return related to the market abnormal return. The size and value factors are based on Fama and French

$$R_{pt} - R_{ft} = \alpha_P + \beta_{1p}(R_{mt} - R_{ft}) + \beta_{2p} SMB_t + \beta_{3p} HML_t + \beta_{4p} MOM_t + \varepsilon_{pt}$$

(1993). The momentum factor originated from Carhart (1997).

[38] Chhaochharia and Grinstein (2007) follows the same method.

However, we use the three-factor model of Fama and French (1993) as a benchmark in this chapter. This model expands on the capital asset pricing model (CAPM) by adding size and value factors in addition to the market risk factor in CAPM. This model incorporates the fact that value and small cap stocks outperform markets. Fama and French (1993) attempted to make a better model to measure market returns and found that value stocks outperform growth stocks and small cap stocks tend to outperform large cap stocks. As an asset pricing model, the performance of portfolios with a number of small cap and/or value stocks would be lower than the CAPM result, as the three-factor model takes into account small cap and value outperformance. The reason we use the Fama-French three-factor model is that there are many papers[39] which report no evidence of the momentum effect in Korean exchange. Thus, we do not consider the momentum factor. Suppose we are interested in the portfolio, p. Then the Fama-French three-factor model can be written as follows:

$$R_{pt} - R_{ft} = \alpha_P + \beta_{1p}(R_{mt} - R_{ft}) + \beta_{2p}SMB_t + \beta_{3p}HML_t + \varepsilon_{pt} \quad (1)$$

$\mathbf{R}_{pt}$ is the equal weighted return of portfolio p at time t. $\mathbf{R}_{ft}$ and $\mathbf{R}_{mt}$ are a risk-free interest rate and the market return at time t respectively. The first factor, ($\mathbf{R}_{mt}$-$\mathbf{R}_{ft}$) is the market factor as in the CAPM. This factor controls for the difference between market and risk-free returns. The second and the third factor are the size factor and the value factor, respectively, as in Fama and French (1993). The term SMB stands for the difference between the two portfolio returns, the return of small firms' portfolio and the return of large firms' portfolio. The HML is the difference between the two portfolio returns, the return of value stocks and growth stocks. The constant term, α_p

[39] Lee and Ahn (2002), Park and Gee (2006), Lee and Kim (2004)

is the excess returns, which is specific to the portfolio p which we are interested in. One important assumption behind this is that the asset-pricing model is indeed true. If we make this assumption, then we can consider the term, a_p as excess returns.[40] Suppose the change in governance structure has a positive effect on firm value. Then we can expect the estimate of the coefficient, a_p will be significant and positive.

Table 2.6 Ranges for Six Portfolios

	Median ME	
70th BTM Percentile	Small Value	Big Vaue
30th BTM Percentile	Small Neutral	Big Neutral
	Small Growth	Big Growth

The data about firms' returns were downloaded from the KisValue Database,[41] and market indexes were obtained through Datastream. We used the three-year Korean government bond rate as a risk-free interest rate. This was downloaded from the database of the Bank of Korea. Market values and book-to-market ratios to calculate the two Fama-French factors were obtained from KisValue Database. Professor French provided Fama-French factors for some countries on his website. However, Fama-French factors of the Korean market are not provided on the webpage. Thus, we calculated the factors by the method which Fama and French (1993) suggested. We divided stocks into three categories, Value, Neutral, and Growth, by 30th percentile and 70th percentile of book-to-market ratio and also divided them into two categories, Small and Big, by 50th percentile of the total market value. As shown in Table 2.6, we obtained six portfolios and calculated the average returns for each portfolio. Then we obtained the two factors by the equation (2). We used daily data.

[40] The literature points out this as a limitation of this method. The results may vary across asset pricing models.
[41] http://www.kisinfo.co.kr/eng

$$SMB = 1/3(SmallValue+SmallNeutral+SmallGrowth) - 1/3(BigValue+BigNeutral+BigGrowth)$$
$$HML = 1/2(SmallValue+BigValue) - 1/2(SmallGrowth+BigGrowth) \quad (2)$$

7. Estimation and the Results

As shown above, the government carried out a large reform of corporate governance of business groups after the Asian financial crisis. This is because the government diagnosed the reason for being seriously affected by the financial crisis as the poor corporate governance structure in Chaebols. The rules about corporate governance were amended several times over the period from 1998 to 2001 as shown in Table 1.8 (time line). Thus, it is not easy to segregate the effect of each change of a rule.

The changes in corporate governance regulations is concentrated in the period between 1998 and 1999, focusing on improvement of corporate governance of the Chaebols. To see how these rule changes differently affect the value of Chaebol firms and the value of non-Chaebol firms, we used data in 1998 and 1999 and divided the sample into two subsamples, the top-30 Chaebol firms and the non-top-30 Chaebol firms. The Fair Trade Commission had announced top 30 business groups every year from 1987 until 2001 to regulate them and the government had targeted them in that period. We estimate the following relation. Portfolio “p” consists of the top-30 Chaebol firms in 1998 and portfolio “q” is comprised of the non-top-30 Chaebol firms in 1998.

$$R_{pt} - R_{ft} = \alpha_p + \beta_{1p}(R_{mt} - R_{ft}) + \beta_{2p}SMB_t + \beta_{3p}HML_t + \varepsilon_{pt}$$
$$R_{qt} - R_{ft} = \alpha_q + \beta_{1q}(R_{mt} - R_{ft}) + \beta_{2q}SMB_t + \beta_{3q}HML_t + \varepsilon_{qt}$$

The actual estimation is as follows:

$$\begin{aligned} R_t - R_{ft} &= d_\alpha D_p + \alpha + \beta_{1D} D_p (R_{mt} - R_{ft}) + \beta_1 (R_{mt} - R_{ft}) \\ &\quad + \beta_{2D} D_p SMB_t + \beta_2 SMB_t + \beta_{3D} D_p HML_t + \beta_3 HML_t + \varepsilon_{pt} \end{aligned}$$

where,

$$Dp = \begin{cases} 1 \; if \; stock \; i \in p \\ \mathbf{0} \; otherwise \end{cases}$$

The estimates of excess returns are presented in Table 2.7.[42]

Table 2.7 Estimated Excess Returns (Top 30 Chaebol Firms Dummy)

(n=976, Adj. R-Sq=0.64)

1998-1999	estimate	t-value	annualized
α	0.00219***	3.08	0.55188
D(Top 30 Firms)	0.01835***	14.93	4.6116

As stated above, α stands for the abnormal returns. The estimate of α is 0.00219 with t-value 3.08 in the estimation.[43] This means that the excess return of the non-top-30 Chaebol firms' portfolio is statistically significant at the 1 % level. Also from the estimate of top-30 firm dummy, 0.01835 with t-value 14.93, we know that the excess returns of the top-30 Chaebol firms are significantly higher than those of the non-top-30 Chaebol firms. [44] We also report the annualized excess return of the portfolios. We run alternative regression to see the abnormal returns of top-30 Chaebol firms. The

[42] The whole results of the estimation, Y=AX+DBX+ε, are reported in the Appendix of this chapter. In addition to these, we report another sets of results of an alternative estimation, Y=(1-D)AX+DBX+ ε, in the Appendix.
[43] ***, **, * mean that the estimates are significant at the 1, 5, 10 % levels, respectively.
[44] The annualized excess returns are obtained by [252 trading days per year * estimate].

estimate of excess return of non-top-30 Chaebol firms is 0.0205[45] and this estimate is significant at the 1 % level.[46] From the Table 2.7 we can conclude non-top-30 Chaebol firms earned positive returns in 1998-1999 and top-30 Chaebol firms earned more excess returns in the same period.

Korea has two main stock exchanges, the Korea Stock Exchange (KSE) and the Korea Securities Dealers Automated Quotations (KOSDAQ). Most of the changes in corporate governance in this period did not differentiate in treatment of the two markets in regulating them except the clause about outside directors. The outside director system was first introduced in the amendment of the Securities and Exchange Commission in Korea in February 1998 and it regulated only the listed firms on the KSE. After that, it was extended to regulate the listed firms on the KOSDAQ in March 2001. Paying attention to this fact, we compare the excess returns from the two portfolios of firms on the two different stock markets. If having outside directors has a positive effect on firm value, then the KSE portfolio return must outperform the KOSDAQ portfolio return in 1998. Similarly the KOSDAQ portfolio returns should outperform the KSE portfolio returns in 2001. The estimation results are reported in Table 2.8. The dummy variable equals one if the firm is in the KOSDAQ portfolio and zero otherwise.

Table 2.8 Estimated Excess Returns (Firms on the KSE Dummy in 1998)

(n=480, Adj. R-Sq=0.70)

1998	estimate	t-value	annualized
α	-0.000612	-0.79	-0.154224
D(Firms on the KSE)	0.02082***	13.27	5.24664

[45] With 20.54 t-value.
[46] This result comes from the alternative estimation equation, $Y=(1-D)AX+DBX+\varepsilon$ and is reported in the Appendix.

The estimate of α is -0.000612 which is estimated abnormal returns of firms on the KOSDAQ in 1998. This estimate is negative, but not significant even at the 10% level. However, we know that the estimate of abnormal returns of firms on the KSE in 1998 is statistically significantly greater than the negative α estimate at the 1% level. From the alternative estimation, the estimate of the excess return of the firms on the KSE in 1998 is 0.0202 with 14.8 t-value. Thus, the portfolio earned positive excess returns in 1998.

Table 2.9 Estimated Excess Returns (Firms on the KOSDAQ Dummy in 2000)

(n=486, Adj. R-Sq=0.76)

2001	estimate	t-value	annualized
α	0.002195***	2.85	0.55188
D(Firms on the KOSDAQ)	0.010728***	8.59	2.70144

Table 2.9 shows estimates of abnormal returns of the KSE firm portfolio. The estimate is 0.002195 and significant at the 1 % level. From the positive and significant estimate of the KOSDAQ dummy coefficient, we know KOSDAQ portfolio outperformed the KSE portfolio in 2001. The estimate of the abnormal return of the KOSDAQ portfolio, 0.012924 is positive and significant at the 1% level.[47]

As shown in Table 2.8 and 2.9, the excess return of the KSE portfolio in 1998 is positive and significant at the 1 % level, and the KSE portfolio outperformed the KOSDAQ portfolio in 1998. However, the excess return of the KOSDAQ portfolio is not significant in 1998. The excess return of the KOSDAQ portfolio in 2001, is 0.00219 which is positive[48] and significant at the 1% level and that of KOSDAQ portfolio in 2001 is 0.010728 which is also positive and significant. The positive and

[47] The results are provided in the Appendix of this chapter.
[48] From the alternative estimation, the estimate of abnormal return of the KOSDAQ portfolio in 2001 is 1.2924 with 13.15 t-value. Details are in the Appendix of this chapter.

significant estimate of abnormal returns of the KOSDAQ portfolio means that the KOSDAQ portfolio outperformed the KSE portfolio in 2001.

We also checked if the uniform regulation affected the firm value of small firms differently from large firms. Table 2.10 reports the results. The estimates of the excess returns of the small firms' portfolio and large firms' portfolio are 0.002045 with 2.94[49] t-value and 0.01801 with t-value 18.47, respectively. However, the estimate of the small firms dummy is -0.0122 which means that the small firms' portfolio underperformed the large firm portfolio in 1998-1999.

Table 2.10 Estimated Excess Returns (Small Firms Dummy)

(n=976, Adj. R-Sq=0.57)

1998-1999	estimate	t-value	annualized
α	0.01801***	18.47	4.5385
D (Small Firms)	-0.0122***	-10.36	-3.0744

Most of the estimated excess returns are positive and significant at the 1% level, which is consistent with our expectations. According to these results, we conclude that the reform of corporate governance had a positive effect on firm value. Also, to analyze if this reform affected differently firm value depending on firm size, we divided the sample in each market into two categories, large firms and small firms, and obtained excess returns. The excess return of the small firm portfolio is positive and significant at the 1 % level. Thus, we failed to find evidence to show that the reform which did not consider firms' characteristics affects negatively the small firms' value.

[49] This estimation results are reported in the Appendix.

8. Conclusion

For the last decade, most Korean firms underwent changes of their corporate governance structure, and corporate governance rules were changed significantly. As internal control systems, the roles of both outside directors and audit committees were emphasized. The rights of minority shareholders were strengthened, and to protect their rights the corporate governance rules lowered the requirements for them to exercise their rights. As an external control system, instead of regulating the top-30 Chaebols, new rules were introduced like the limitations on debt guarantees, the limitations on mutual investment, and the limitations on total investment amount. In addition to this, the government reformed the audit system and the disclosure system to guarantee transparency of business.

Most of these changes were made by the government following the IMF Guidelines and were movements toward the American style of corporate governance. Some economists argue that these changes might negatively affect the value of specific kind of firms since the change did not take account of political and historical aspects of Korean corporations.

The purpose of this chapter is to test whether there was a positive impact of governance rule changes. Another purpose is to ask if there were differential impacts, where non-Chaebols or small firms were disadvantaged by these rules, taking the financial crisis in 1997 as a natural experiment. We find that non-Chaebol firms also statistically significant positive abnormal returns from these policy changes and that there is no evidence that small firms had negative abnormal returns. Small firms obtained statistically significant positive abnormal returns. The results show us that the reform of corporate governance significantly increased firm value, especially top-30 Chaebol firms, in 1998 and 1999. We found no evidence to support the hypothesis

that the uniform changes negatively affected the value of non-Chaebol firms and small firms. Introduction of the outside director system has a positive impact on firm value. In the year when the system was introduced in the KSE, the KSE portfolio outperformed the KOSDAQ portfolio, but the KOSDAQ portfolio outperformed the KSE portfolio in 2001 when the system was introduced in the KOSDAQ.

Since the study in this chapter is based on the listed firms as of 2007 in the KSE and KOSDAQ, due to data availability, this has its own limitation. Another limitation of this study is caused by using only the firms which survived until 2007. If non-listed firms or firms that have disappeared, since 1997 were included in this study, the results might be different from those reported above.

APPENDIX

The Results of the Estimation of the Abnormal Returns: $Y=AX+BX+\varepsilon$

A.1 Estimation Results of the Model with Top-30 Chaebol Firm Dummy in 1998-1999

Variables	Estimates	t-values
Intercept	0.00219	3.08
D(Chaebol)	0.01832	14.93
R_m-R_f	-0.58233	-19.5
D(R_m-R_f)	-0.09425	-2.37
SMB	0.00427	6.18
D(SMB)	-0.00455	-4.75
HML	0.00002	0.04
D(HML)	0.00537	7.1

A.2 Estimation Results of the Model with KSE Firm Dummy in 1998

Variables	Estimates	t-values
Intercept	-0.00061	-0.79
D(KSE)	0.02082	13.27
R_m-R_f	-0.04791	-1.31
D(R_m-R_f)	-0.47061	-9.65
SMB	0.00137	1.51
D(SMB)	0.00155	1.25
HML	0.00007	0.08
D(HML)	0.01076	8.75

A.3 Estimation Results of the Model with KOSDAQ Firm Dummy in 2001

Variables	Estimates	t-values
Intercept	0.00219	2.85
D(KOSDAQ)	0.01072	8.59
R_m-R_f	-0.75701	-19.42
D(R_m-R_f)	-0.04839	-0.88
SMB	0.00678	6.93
D(SMB)	0.00314	2.27
HML	-0.00066	-1.07
D(HML)	-0.01016	-11.63

A.4 Estimation Results of the Model with Small Firm Dummy in 1998-1999

Variables	Estimates	t-values
Intercept	0.01801	18.47
D(Small)	-0.01596	-13.33
R_m-R_f	-0.57817	-22.53
D(R_m-R_f)	0.04874	1.26
SMB	0.00146	2.26
D(SMB)	0.00359	3.83
HML	0.004	7.69
D(HML)	-0.0065	-8.79

The Results of an Alternative Estimation of the Abnormal Returns:

$Y=(1-D)AX+DBX+\varepsilon$

B.1 Estimation Results of the Model with Top-30 Chaebol Firm Dummy in 1998-1999

Variables	Estimates	t-values
D(Chaebol)	0.02052	20.54
$D(R_m-R_f)$	-0.67659	-25.73
D(SMB)	-0.00027	-0.42
D(HML)	0.0054	10.13
(1-D)(Chaebol)	0.00219	3.08
$(1-D)(R_m-R_f)$	-0.58233	-19.5
(1-D)(SMB)	0.00427	6.18
(1-D)(HML)	0.00002	0.04

B.2 Estimation Results of the Model with KSE Firm Dummy in 1998

Variables	Estimates	t-values
D(KSE)	0.0202	14.8
$D(R_m-R_f)$	-0.51852	-16.15
D(SMB)	0.00292	3.42
D(HML)	0.01083	12.51
(1-D)(KSE)	-0.00061	-0.79
$(1-D)(R_m-R_f)$	-0.04791	-1.31
(1-D)(SMB)	0.00137	1.51
(1-D)(HML)	0.00007	0.08

B.3 Estimation Results of the Model with KOSDAQ Firm Dummy in 2001

Variables	Estimates	t-values
D(KOSDAQ)	0.01292	13.15
D(R_m-R_f)	-0.8054	-20.79
D(SMB)	0.00992	10.15
D(HML)	-0.01083	-17.53
(1-D)(KOSDAQ)	0.00219	2.85
(1-D)(R_m-R_f)	-0.75701	-19.42
(1-D)(SMB)	0.00678	6.93
(1-D)(HML)	-0.00066	-1.07

B.4 Estimation Results of the Model with Small Firm Dummy in 1998-1999

Variables	Estimates	t-values
D(Small)	0.00204	2.94
D(R_m-R_f)	-0.52942	-18.17
D(SMB)	0.00506	7.49
D(HML)	-0.00249	-4.76
(1-D)(Small)	0.01801	18.47
(1-D)(R_m-R_f)	-0.57817	-22.53
(1-D)(SMB)	0.00146	2.26
(1-D)(HML)	0.004	7.69

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CHAPTER 3

ESTIMATION OF UNKNOWN STRUCTURAL CHANGES OF FIRMS IN THE KSE

Abstract

We estimated the dates when firms' structural changes occurred around the Asian crisis and test them. We assume that the dates of structural changes are unknown. We utilize Hansen's (1997) method to test no structural changes. The proposed results are quite different from what are widely believed.

1. Introduction

The classical test for structural change is the Chow test.[50] The test is implemented by dividing the whole sample into two sub-groups, estimating separately and comparing the two estimation results from the two sub-samples. The null hypothesis of this test is that there is no structural change, that is, the two sets of parameters are same. Thus, this test is an F-test.

As pointed out in Hansen (1997), a main problem with this approach is that the date of structural change is endogenous or uninformative. In order to implement this test, empirical researchers should either arbitrary select a break date or choose a break date considering data behavior. With an arbitrarily chosen break date, the test could be informative. If the second is the case, the break date will be endogenous. Thus, the result of the Chow test can be different over which break date is chosen.

[50] Chow(1960)

Hansen (2001) shows a result of a test for structural change of labor productivity in the U.S. from 1947 through 2001. He proposed three possible break dates, 1963, 1982, and 1994. These proposed break dates are quite different from 1973 which is widely believed. This example tells us that researchers need to consider break dates as unknown.

Quandt's (1960) solution is to do the Chow test on every possible break date over the study period and to choose the date which gives the largest Chow test statistic. This approach looks reasonable.[51] However, his solution does not have any applications until the 1990s. The main reason is that the chi-square critical values are not appropriate since it treats break dates as unknown. Recently, a series of papers have solved the unanswered question. Andrews (1993) and Andrews and Ploberger (1994) provide appropriate confidence intervals.[52] Hansen (1997) shows how to calculate p-values of asymptotic distributions of some test statistics for structural changes. In this chapter, we test if the time series of seventy Korean firms' returns have structural breaks. In doing so, we treat break dates as unknown and estimate the equation following this modern literature of structural change.

2. Estimation of the Break dates

We assume that the break dates are unknown and the returns follow AR(1). Thus, our goal is to estimate the break dates and test for structural changes of unknown timing in linear regression models around the time of the Asian financial crisis on seventy firms[53] on the Korean Stock Exchange. We report the SupF test statistic from

[51] argmaxF=argminSSR under homoskedasticity
[52] These confidence intervals are bigger than those of the usual Chi-square.
[53] This paper is a companion paper of Choe(2008a) and devised to give structural breakdates to the paper. That is why we analyzed seventy Korean firms.

Quandt (1960), and ExpF and AveF test statistics from Andrews and Ploberger (1994). We utilize Hansen's (1997) procedure to obtain the p-values[54] of the test statistics.

Suppose that the model is the AR(1):

$$y_t = \beta y_{t-1} + e_t, \quad t = 1, ..., n,$$

with $\sigma^2 = E(e_t^2)$. Thus, we are interested in if $\theta=(\beta, \sigma^2)$ is constant over time.[55] To test this, the structural change in θ (m×1 vector) can be written by

$$\theta = \left\{ \begin{array}{ll} \theta_1, & t < k \\ \theta_2, & t \geqslant k \end{array} \right\}$$

where $m \leq k \leq n-m$. Any of a Wald, Lagrange multiplier (LM), and likelihood ratio (LR) statistics can be used since their asymptotic distributions are same. Let $F_n(k)$ denote one of the test statistics of the hypothesis of no structural change, $\theta_1=\theta_2$ for given k. Then, we can denote the Quandt test statistic[56] as follows:

$$SupF_n = \sup_{k_1 \leqslant k \leqslant k_2} F_n(k)$$

The ExpF_n and AveF_n from Andrews and Ploberger (1994) are defined as follows: Andrews(1993) and Andrews and Ploberger (1994) show[57] that each of these statistics

$$ExpF_n = \ln\left(\frac{1}{k_2 - k_1 + 1} \sum_{t=k_1}^{k_2} \exp\left(\frac{1}{2} F_n(k)\right)\right)$$

$$AveF_n = \frac{1}{k_2 - k_1 + 1} \sum_{t=k_1}^{k_2} F_n(k).$$

[54] Hansen(1997)
[55] This is a different question from if x_{ni} is stationary or not.
[56] Quandt (1960)
[57] Under a set of regularity conditions

has the following asymptotic null distribution respectively:

$$Sup\ F_n \xrightarrow{d} Sup\ F(\pi_0) = \sup_{\pi_1 \leqslant \tau \leqslant \pi_2} F(\tau)$$

$$Exp\ F_n \xrightarrow{d} Exp\ F(\pi_0) = \ln\left(\frac{1}{\pi_2 - \pi_1}\int^{\pi_2} \exp\left(\frac{1}{2}F(\tau)\right)d\tau\right)$$

$$AveF_n \xrightarrow{d} Ave\ F(\pi_0) = \frac{1}{\pi_2 - \pi_1}\int^{\pi_2} F(\tau)d\tau$$

where $F(\tau) = \frac{(W(\tau)-\tau W(\tau))'(W(\tau)-\tau W(\tau))}{\tau(1-\tau)}$, $W(\tau)$ is an $m \times 1$ Brownian motion, $\pi_1 = k_1/n$ and $\pi_2 = k_2/n$. π_0 is $\frac{1}{1+\sqrt{\lambda_0}}$, where $\lambda_0 = \frac{\pi_2(1-\pi_1)}{\pi_1(1-\pi 2)}$.

3. Methodology

The main problem with the Quandt statistic is that one cannot use the chi-square distribution to assess statistical significance. If the breakdate is known, one can use the distribution. However we are assuming that the date is not known. Thus we need to find a function $p(x|\theta)$ which is close to the true function $p(x)$. Hansen (1992) and Mackinnon (1994) estimate p-value functions for these nonstandard test statistics. Hansen (1992) uses a polynomial,[58] $\alpha_v(x|\theta) = \theta_0 + \theta_1 x + \cdots + \theta_v x_v = p(x|\theta)$ and estimates parameters by a least squares polynomial regression of upper percentiles on quantiles. This method was evolved by Mackinnon (1994) through using $p(x|\theta) = 1 - \Psi(\alpha_v(x|\theta)) = 1 - \Psi(\theta_0 + \theta_1 x + \cdots + \theta_v x_v)$.[59] Hansen (1997) adds an unknown parameter η to allow the distribution to depend on it. Thus, Hansen (1997) uses $p(x|\theta) = 1 - \Psi(\alpha_v(x|\theta)|\eta)|\theta)$ and picks the chi-squared distribution with η degrees of freedom, $\Psi(\cdot|\eta)=\chi^2(\eta)$. In this chapter, we follow Hansen's (1997) choice.

[58] By the Stone-Weierstrass theorem, any bounded continuous function can be arbitrarily well approximated on a compact set by a polynomial.
[59] Ψ is a leading distribution function. In Mackinnon's (1994) paper he uses the standard normal distribution.

He provides the distributions of Sup F_n, Exp F_n and Ave F_n for various values of m and π.[60]

4. Empirical Results of the Quandt Test

We estimate the break dates for seventy firms on the KSE from 1994 through 2005. Firm IDs stand for the Datastream[61] tickers. Table 3.1 reports the date which has the maximum Chow test statistic during the study period. The third, fourth, and fifth columns have the Quandt,[62] ExpF_n,[63] and AveF_n[64] statistics respectively. The numbers in parenthesis are the p-values for each corresponding test statistic.

The Quandt statistics are not significant at the 10% level for YKG, AFM, HDE, SSG, SSR, KAA, LUS, DLI, DGB, BOP, HYS, TWI, KUM, and DYY. At the 5% significance, those for NYD, HPL, and PIS[65] are not significant, either. Thus, we do not reject the null hypothesis that these firms have no structural breaks during the study period. The reported test statistics are not much different and the three p-values corresponding to the test statistics are a little different from each other, but very similar. The Appendix provides the Quandt test statistic for two sample firms and the Chow test statistic on each possible break date for the two sample firms.

[60] We choose 0.15 for π_0 and m=3.
[61] All these firms' stock price data were downloaded via the Datastream terminal.
[62] Quandt (1960)
[63] Andrew and Ploberger (1994)
[64] Andrew and Ploberger (1994)
[65] Including what are listed above.

Table 3.1 Test Statistics and p-values

Firm ID	Break date	SupFn(p-value)	ExpFn(p-value)	AveFn(p-value)
SGL	14-Jun-00	14.5361 (0.0139)	4.0259 (0.0215)	4.5537 (0.0526)
KAW	24-Apr-00	61.0454 (0.0000)	26.4789 (0.0000)	29.9734 (0.0003)
PIS	23-Feb-00	9.8923 (0.0988)	2.4685 (0.1087)	3.0309 (0.1726)
SKT	11-Aug-03	19.4876 (0.0015)	6.9361 (0.0015)	10.0374 (0.0013)
SHB	18-Apr-03	14.7209 (0.0128)	4.1458 (0.0190)	3.4965 (0.1196)
HDR	26-Jul-02	11.8847 (0.0436)	3.1442 (0.0531)	4.0353 (0.0785)
SGD	10-Aug-99	20.0243 (0.0012)	7.1543 (0.0012)	6.1073 (0.0166)
YKG	16-Apr-96	4.4035 (0.6578)	0.7280 (0.6948)	1.0890 (0.7391)
AFM	10-Jun-96	4.9781 (0.5626)	0.8043 (0.6438)	1.3794 (0.6087)
SSO	27-Mar-03	21.0943 (0.0007)	7.5069 (0.0009)	9.1640 (0.0022)
HAC	13-Dec-02	11.8154 (0.0449)	3.6246 (0.0323)	6.0928 (0.0167)
HDE	19-Dec-03	7.7576 (0.2243)	1.7628 (0.2326)	2.5407 (0.2538)
SSG	18-Jun-03	5.5224 (0.4788)	0.9248 (0.5692)	1.3044 (0.6410)
KAM	24-Apr-01	42.0917 (0.0000)	17.2522 (0.0000)	16.3904 (0.0001)
SGF	17-Feb-00	21.1168 (0.0007)	7.6209 (0.0008)	9.8875 (0.0015)
LCV	14-Apr-04	18.0645 (0.0029)	6.2092 (0.0027)	7.6660 (0.0057)
CFC	23-Nov-00	13.3229 (0.0236)	3.9318 (0.0236)	5.1684 (0.0330)
SSR	23-Sep-02	7.2856 (0.2660)	1.3494 (0.3634)	1.7864 (0.4532)
DOS	21-Jan-03	11.0736 (0.0612)	2.6110 (0.0933)	2.4510 (0.2723)
SEM	13-Sep-01	15.0478 (0.0111)	3.9876 (0.0223)	5.6659 (0.0228)
SCT	21-Feb-02	12.6931 (0.0310)	2.9414 (0.0657)	2.9857 (0.1789)
KAA	30-Sep-97	9.1673 (0.1316)	2.2018 (0.1447)	2.6225 (0.2381)
KKG	2-Jun-99	20.9484 (0.0008)	7.0138 (0.0014)	5.0470 (0.0362)
INI	29-Jul-03	13.6426 (0.0206)	3.8076 (0.0268)	4.1889 (0.0697)
KPV	17-Apr-03	19.3544 (0.0016)	6.2746 (0.0026)	4.6317 (0.0495)
LUS	24-May-00	6.6969 (0.3267)	1.2131 (0.4205)	1.8160 (0.4433)
SGA	11-Nov-96	27.2785 (0.0000)	8.1555 (0.0005)	7.9127 (0.0048)
CSB	18-Jun-99	37.5221 (0.0000)	14.2162 (0.0000)	7.2786 (0.0073)
HMO	18-Dec-02	19.3914 (0.0016)	6.1400 (0.0029)	7.5310 (0.0062)
DLI	24-Jul-00	9.5515 (0.1132)	2.7556 (0.0800)	3.6621 (0.1050)
HKT	12-Feb-99	16.7612 (0.0052)	4.4536 (0.0140)	4.4942 (0.0550)
HPL	27-Oct-95	11.0945 (0.0606)	3.0810 (0.0567)	4.0131 (0.0798)
DGB	4-May-01	8.9857 (0.1412)	1.7393 (0.2386)	2.1659 (0.3397)
CLI	18-Mar-99	43.4867 (0.0000)	17.6430 (0.0000)	12.6429 (0.0004)
HJS	1-Dec-95	67.9022 (0.0000)	28.6101 (0.0001)	10.2101 (0.0012)

Table 3.1 (continued)

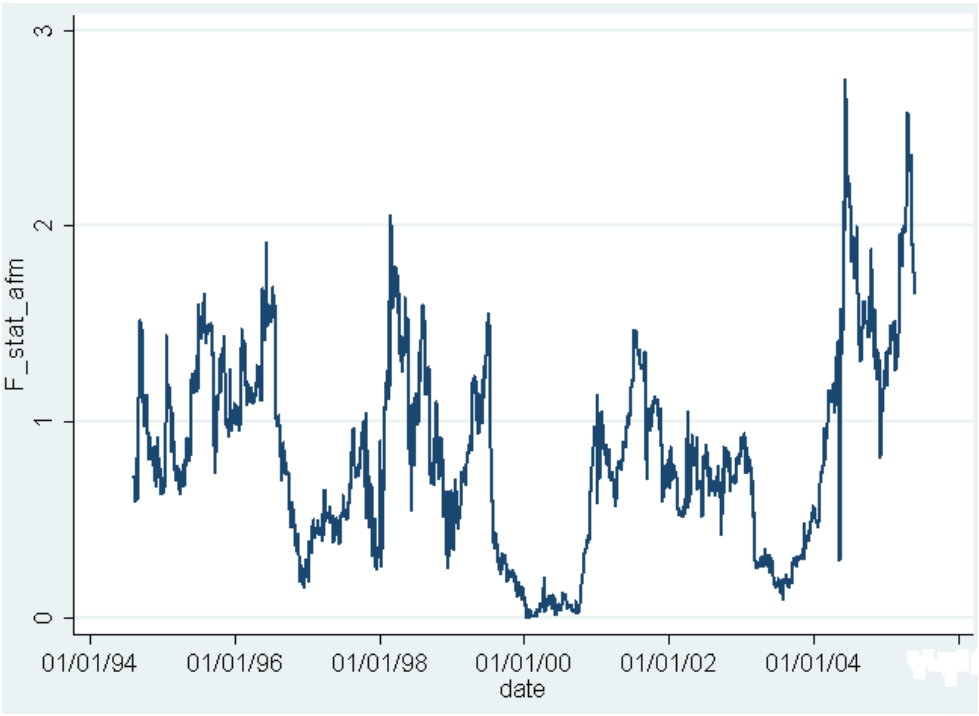
Firm ID	Break date	SupFn(p-value)	ExpFn(p-value)	AveFn(p-value)
HJY	8-Nov-95	36.8363 (0.0000)	14.1662 (0.0000)	12.2472 (0.0004)
NHS	27-Feb-98	39.2231 (0.0000)	14.9340 (0.0000)	10.2039 (0.0012)
KRZ	2-Oct-97	11.9257 (0.0429)	3.4955 (0.0368)	3.8331 (0.0919)
LTC	24-Dec-99	15.1793 (0.0105)	3.8158 (0.0265)	4.4255 (0.0580)
BOP	21-Sep-98	8.2861 (0.1844)	1.6522 (0.2622)	2.4689 (0.2685)
HYS	13-Nov-98	7.2037 (0.2738)	1.6570 (0.2609)	2.4167 (0.2797)
LCB	17-May-99	19.0421 (0.0018)	5.8378 (0.0038)	5.8097 (0.0206)
DGY	9-Feb-99	29.3490 (0.0000)	11.5082 (0.0001)	7.1944 (0.0078)
YHO	18-Jun-98	48.6682 (0.0000)	20.8671 (0.0000)	23.3308 (0.0001)
KOR	24-Jul-00	27.3484 (0.0000)	9.8548 (0.0002)	9.8548 (0.0002)
OLB	4-Jun-01	23.2901 (0.0003)	8.6035 (0.0004)	8.1159 (0.0042)
HYC	2-Jan-01	17.9840 (0.0030)	5.1757 (0.0070)	7.1031 (0.0083)
DKS	25-Mar-04	12.5310 (0.0332)	3.0300 (0.0598)	3.9041 (0.0869)
PHM	16-Jan-98	24.6614 (0.0001)	8.2118 (0.0005)	6.5372 (0.0122)
GTC	29-Jul-99	16.0815 (0.0070)	4.8339 (0.0097)	5.6804 (0.0226)
HMP	14-Jul-98	15.4586 (0.0093)	4.1587 (0.0188)	4.8075 (0.0433)
TWR	25-Jan-99	23.3446 (0.0002)	7.9120 (0.0007)	9.7826 (0.0016)
SYC	24-Oct-97	16.1609 (0.0068)	16.1609 (0.0068)	2.3511 (0.2943)
TWI	2-Mar-04	7.2226 (0.2720)	1.9330 (0.1935)	2.9545 (0.1834)
KSM	8-Dec-97	13.3080 (0.0238)	2.6568 (0.0889)	3.4067 (0.1284)
KUM	10-Nov-03	9.6468 (0.1090)	2.4392 (0.1121)	3.6493 (0.1061)
KKP	7-Nov-03	13.2834 (0.0240)	3.2893 (0.0456)	3.9273 (0.0854)
DYY	14-Nov-96	2.6999 (0.9283)	0.5134 (0.8508)	0.9275 (0.8154)
LGT	24-Jul-00	42.8831 (0.0000)	16.9357 (0.0000)	16.4572 (0.0001)
DAP	28-Sep-01	49.0622 (0.0000)	20.2267 (0.0000)	20.5775 (0.0001)
SYD	16-Jun-98	14.5976 (0.0136)	3.7214 (0.0292)	3.8453 (0.0910)
HII	22-May-98	26.0400 (0.0001)	8.0698 (0.0006)	5.0974 (0.0348)
PSN	23-Feb-00	23.7197 (0.0002)	7.9028 (0.0007)	6.9455 (0.0092)
KIA	29-Oct-97	12.0539 (0.0406)	2.5385 (0.1008)	3.2427 (0.1461)
SSM	18-Jul-02	23.4133 (0.0002)	7.2774 (0.0011)	3.7228 (0.1002)
HLC	30-Jun-99	30.3116 (0.0000)	10.9405 (0.0001)	(8.9414 0.0025)
KFZ	19-Dec-95	36.5885 (0.0000)	14.0817 (0.0000)	4.7973 (0.0437)
HNR	26-Dec-96	16.5123 (0.0058)	5.5293 (0.0050)	6.2626 (0.0148)
NYD	8-Oct-03	10.1302 (0.0899)	2.9427 (0.0656)	3.0308 (0.1727)
ANI	22-May-00	54.1941 (0.0000)	21.9213 (0.0000)	11.9965 (0.0005)

5. Conclusion

This study examines the structural changes of seventy firms in the Korean Stock Exchange around the Asian crisis. The Korean economy was broken up by the Asian financial crisis in 1997, and then it took some years for it to be recovered through the effort of the government and firms. Thus, it is natural to think that firms' specific parameters might have been changed reflecting firms' efforts to survive the crisis. This chapter assumes that the structural break dates are unknown. Then we estimated them and test for structural change of unknown timing around the crisis on each of seventy firms in the KSE.

The proposed results are a little different from what are widely believed. At the 5% significance, the Quandt statistics for eighteen firms out of seventy are not significant, which means that we fail to find evidence of structural breaks in the series. There are eight firms which have break dates before the crisis. However, there are forty-four firms which have break dates after the crisis. Out of these forty-four firms, twenty-six have break dates within three years after the crisis and the rest of them have break dates at least three years after the crisis.

APPENDIX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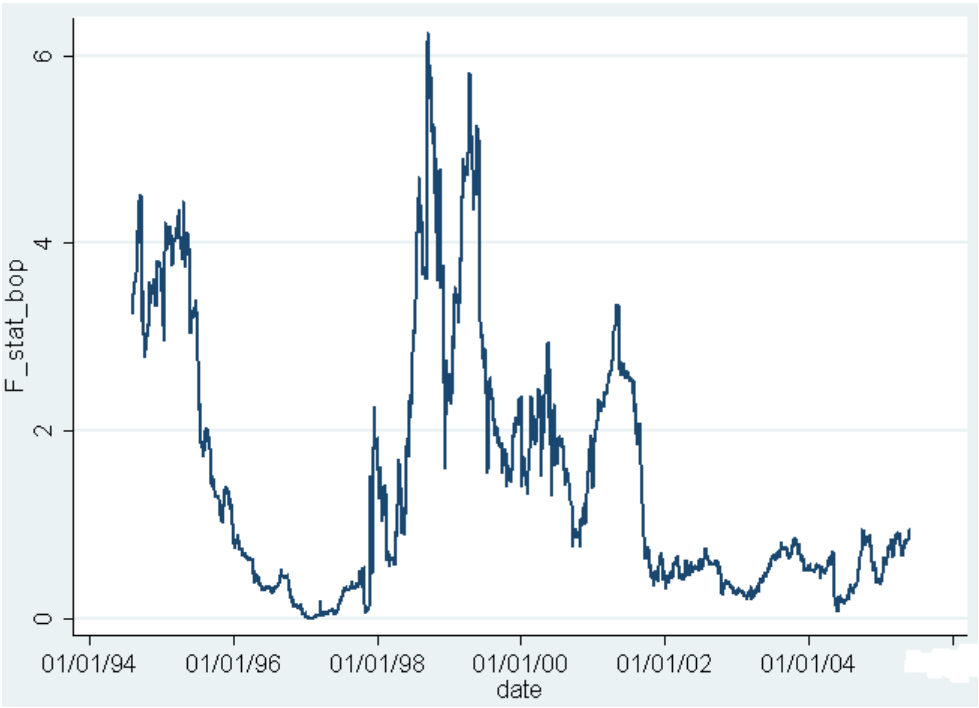
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CHAPTER 4

AN EVENT STUDY OF INSIDER TRADING: EXAMINING KOREA BEFORE AND AFTER THE ASIAN CRISIS

Abstract

This chapter examines evidence of insider trading in South Korea before and after the Asian financial crisis starting in 1997 with an event study approach. We allow firm specific parameter change during the study period and estimate the structural break dates using Hansen's (1997) method. With this information we divide data sets into two subsets to obtain two sets of firm specific parameters and calculate abnormal returns. This study uses 567 news announcements from 1994 through 2005 about firms on the Korean Stock Exchange (KSE) and the New York Stock Exchange (NYSE). We study evidence of insider trading in the KSE by investigating the abnormal returns near the times of the announcements. Data from the NYSE are used and serve as benchmarks for comparative analysis between the two markets. We test if there are significant abnormal price changes during the designated periods. We find that there is strong evidence before the crisis to show that there were abnormal returns prior to the news announcements which indicates that there may have been insider trading in that period. This contrasts with after the crisis and new corporate governance regulations which the evidence of insider trading dissipates.

1. Introduction

Trading by insiders refers to transactions in a corporation's stock or other securities (e.g. bonds or stock options) by corporate insiders such as officers, directors, or large-shareholders. The Securities and Exchange Act of the U.S. prohibits trading by

insiders based on not yet published information by insiders, which is called insider trading. Thus, insider trading defined in this fashion is illegal although insiders may trade in their own stocks if they are not using material non-public information. This has been controversial. Some believe that insider trading is helpful for stock market efficiency[66] and insist that insider trading should be allowed because it provides private information to the market, while others think that it is unfair because insiders are more likely to obtain excess returns by exploiting non-public material information than those who trade without access to the same information available to insiders. Thus, they support the regulation of trading using inside information.

In a broad sense, trading by insiders may include trading by insiders who do not exploit non-public information as well as insider trading based on such information. This too is sometimes referred to as "insider trading." In legal parlance, however, this is not "insider trading" albeit being a form of trading by insiders. Most countries have statutes concerning insider trading, but the type of insider trading prohibited by these statues is that which is conducted by insiders using material nonpublic information obtained through their position. Thus, insiders legally can buy and sell stock in their own company all of the time as long as they do not use inside information; their trading is restricted and illegal only at certain times and under certain conditions. However, we will use the technical/legal definition in which the term "insider trading" refers to only illegal insider trading.[67]

In most of the developed countries, trading by insiders of a corporation's stock or other securities is illegal when insiders use material non-public information.

[66] Masson and Madhavan (1991) report that insider trading lowers the value of the firm at the margin, but that greater executive stock ownership raises the value.

[67] As a legal definition, insider trading is only the illegal form. Trading by insiders encompasses a wider scope than insider trading. In the finance literature the legal definition is understood. Thus legal trading by insiders is not insider trading.

According to the efficient market hypothesis (EMH),[68] current market prices reflect all of the available information, including non-public (private) information. Therefore, insiders could not obtain excess returns by employing insider trading, and market participants who were instantly informed of trading by insiders could not, either, under this form of the hypothesis. However, empirical studies[69] show that insiders do obtain excess returns through such trading, which is reasonable ground to reject the strong form of the EMH.

We are assuming that stock markets are semi-strong efficient[70] but, not strong efficient. In this chapter, we examine the strong form of efficiency in the Korean Stock Exchange by using the event study method to analyze the behavior of abnormal prices surrounding news announcements about firms on this market. Thus we conduct a test for the existence of significant abnormal stock price changes. According to the EMH,[71] which says that stock prices reflect all new public information, changes in stock prices before public announcements signify that there may be insider trading using or tipping private information and thus the existence of a dishonest trading.

Once we scrutinize patterns of price change with an event-study approach for the periods before and after public news announcements are made, we can acquire appropriate evidence of market efficiency and insider trading. If inside information leakage does not exist, we will see a clean jump[72] in stock prices only on the date when the public news announcement is made. On the other hand, if we see increases in

[68] The version of this efficiency is the strong form of the efficient market hypothesis.
[69] Banz (1981), Keown and Pinkerton (1981), Ferreira (1995), Banerjee and Eckhard (2001) etc.
[70] The semi-strong form EMH states that all publicly available information is fully incorporated into asset prices.
[71] The semi-strong form of efficiency
[72] We are assuming the semi-strong form of efficiency.

stock prices not only on that date but also before that date, we may assume that the reason for this behavior is illegal insider trading.[73]

Our test of the EMH is conducted by looking at the behavior of stock (or securities) prices before and after news is made public. The hypothesis tells that stock prices should increase or decrease rapidly as soon as the announcement is made and should not change after that. Thus, we can infer market efficiency from the behavior of stock prices. On the other hand, the behavior of stock prices before the public announcement could provide information about market cleanliness like insider trading. More specifically, we investigate the evidence for insider trading profitability on the KSE before and after the Asian crisis in 1997. We test if abnormal stock price changes are significant by using the event study method during these two periods.

As of 2006, there are three kinds of stock markets[74] in Korea. The KSE, which opened in 1956, is the first stock market and the biggest one in Korea. After several modifications, Korean stock markets have gradually assumed their current form. The number of firms on the KSE increased until 1997,[75] when it reached 776. After the financial restructuring following the Asian crisis, however, it gradually declined to 684. The total market value of the public stocks in the KSE was about $673.8 billion in 2006.

The Asian crisis which started in July 1997 in Thailand spread rapidly across many Asian countries. South Korea was one of the countries most affected by the crisis. As the financial crisis affected the Asian countries, many domestic enterprises and national governments could not pay their debts in U.S. dollars because their local

[73] According to Heather Tookes' dissertation (2004), a jump before the announcement date could be the result of an industry wide shock. Since we consider about one hundred announcements for each analyzed case to test abnormal returns and a few instances may be affected by industry wide shocks, we ignore this possibility.
[74] The three kinds of markets are the Korea Stock Exchange, the Korea Securities Dealers Association Automated Quotation, and the over-the-counter market.
[75] The major expansion was after the mid-1980s.

currency was very weak due to the crisis. At that time, the IMF suggested multi-billion dollar `rescue packages' for each nation, but, the IMF's offers were conditional on economic reforms called a structural adjustment package (SAP). According to the SAP, each nation had to cut government spending to reduce its deficits, allow insolvent banks and financial institutions to fail, and raise interest rates sharply including financial restructuring. During the past ten years, Korea carried out a restructuring of its economy and reform of its financial sector partly through the SAP and partly by the Korean government's independent judgment.

In this chapter we analyze the results of the restructuring and reform in terms of stock market cleanliness even though they can be evaluated according to some other criteria. We divide the study period, from 1994 through 2005, into two sub-periods, 1994-1997 and 1998-2005, to compare the degree of abnormal returns before the crisis and after. Our focus is on finding evidence of whether there was insider trading during each study period.

One serious problem[76] for this kind of test is that it is a joint hypothesis test of market efficiency and an asset pricing model or insider trading and an asset pricing model. That is, one cannot tell the cause between the mis-specified model and no insider trading when the results are not significant. However, Fama (1991) writes, "The empirical literature on efficiency and asset pricing models passes the acid test of scientific usefulness." Thus, we use this method taking his argument.

In most of the prior literature, studies of insider trading and market efficiency in the U.S. have been based on self-reported data to the Securities and Exchange Commission (SEC). Since it is natural to think that those who want to use inside information to get extra benefits tend to avoid revealing their transactions, the value of the self-reported data is questionable if it used as insider trading data. Even though

[76] Fama (1970b)

insiders report all of their transactions, it may not be possible to tell which transactions are insider trading and which are just transactions by insiders. However, data of insider trading based on inside information is extremely difficult to find.[77] Thus, we utilize another method, the event study method, which may alleviate this problem.

With announcements data, we obtained evidence that could be interpreted as insider trading in the KSE during the period prior to the Asian crisis. The cumulative averaged abnormal returns (CAARs) ***prior*** to good announcements are high before the crisis whereas they are low after the crisis.

This chapter begins with Section 2, a short summary of relevant statutes concerning insider trading focusing on regulations. Section 3 provides the data sources and a data description. In Section 4, an estimation strategy using event study methods is summarized. Section 5 reports the results of the estimation. Section 6 concludes this chapter.

2. Legislation Concerning Insider Trading

Most developed countries have similar statutes which prohibit insiders from buying or selling securities by using undisclosed material information. The scope of this chapter, however, is limited to the insider trading in Korea and the U.S.

2.1 Insider trading in Korea

In 1991, the Korean National Assembly passed a statute which contains a provision prohibiting insider trading based on undisclosed material information in securities markets. According to the provision, insiders who are informed of

[77] To the best of our knowledge, there is only one paper which was based on illegal insider trading data. See Meulbroek(1992).

undisclosed material information in the course of performing their duties shall not use or have another person use the information in connection with the sale and purchase of or any other transaction regarding securities issued by the corporation concerned.[78]

Insiders who are regulated by the provision include each of the following people (including those who were one of the following within the last year):

(1) The corporation concerned and its officers, employees and agents

(2) Persons (including the corporation's agents) who hold stocks or contribution certificates of 10 percent or more of the total number of voting stocks issued or of the total amount of contributions for their own account regardless of its actual owner,

(3) Persons (including the corporation's agents) who have the authority of license, authorization, direction, supervision or other authority with respect to the corporation concerned under this Act or other regulations,

(4) Persons (including the corporation's agents) who entered into a contract with the corporation concerned, or

(5) Persons who receive material non-public information from the above mentioned persons.

Undisclosed material information means any information which may have an important effect on investors' judgment regarding investments and is not yet disclosed to the public by the corporation.[79] If insiders are engaged in prohibited trading, they might face administrative sanction (e.g. suspension of the business), civil liability to contemporaneous traders, or criminal sanctions (e.g. imprisonment for not more than ten years). Therefore, insiders have to disclose material information before they trade in the securities market to avoid sanctions under the relevant statute.

[78] The Korean Securities and Exchange Act §188-2.
[79] The Korean Securities and Exchange Act §186 and 188-2.

2.2 Insider trading in the U.S.

The definition of insider trading in the U.S. is very similar to that in Korea. It is the trading of a corporation's stock or other securities (e.g. bonds or stock options) by corporate insiders such as officers, directors, or holders of more than ten percent of the firm's shares. Trading by insiders can be legal or illegal, just as in Korea. Insiders legally buy and sell stock in their own company all of the time so long as they disclose material information.

Insider trading is illegal only at certain times and under certain conditions. Illegal insider trading means the buying or selling of a security by insiders who possess material information that is still not public. The scope of insiders includes the following:

(1) Persons who, because of a fiduciary or similar relationship, are afforded access to nonpublic investment information from their corporations,[80]

(2) Persons who are retained temporarily by the company in whose securities they trade such as accountants, lawyers, and investment bankers (constructive insiders),

(3) Insiders who pass information to another person(s) knowing that the other person(s) will trade (tipper), or

(4) The recipient of the information (tippee).

To run afoul of insider trading regulations, the information must be that which a reasonable investor would attach importance to in the making of her decision.[81] If insiders violate regulations concerning insider trading, they might face many kinds of sanctions such as SEC injunctions and disgorgement, civil liability to

[80] Executives and directors fit in this category.
[81] TSC Industries v. Northway, Inc., 426 U.S. 438 (1976).

contemporaneous traders, civil recovery by "defrauded" sources of confidential information under rule 10b-5, civil penalties, and "watchdog" penalties. Controlling persons are subject to additional penalties up to $1 million or three times the insider's profits (whichever is greater) if they knowingly or recklessly disregard the likelihood of insider trading by persons under their control. Therefore, insiders have to report their transactions to the SEC if they want their transactions to be legal or they have to abstain from selling or buying stocks.

2.3 Comparison between Korea and the U.S. concerning insider trading

As we have seen above, regulation of insider trading in Korea and the U.S. is very similar, especially regarding the definition of major stock owners and materiality of information. However, there are some differences, which are the order of reporting information and the scope of insiders in the area of tips. In Korea, insiders have to report material information before they make transactions in order for them to be legal, whereas insiders in U.S. may report their insider transactions within two business days of the date the transaction occurred.

In the U.S, sub-tippees or remote tippees are also liable, just like first tippees, if they trade based on non-public information, whereas in Korea only the first tippee, not remote tippees, is liable under the relevant statute according to a Korea Supreme Court decision.[82]

This difference is a serious problem for analyzing insider trading in Korea. Since sub-tippees and remote tippees are not liable, it is possible that some insiders can make a profit without violating the law if they want. Thus, in Korea it is hard to predict that the reported data would include the trading from which insiders obtain

[82] 2002 NO 2314 (Korea Supreme Court) The reasoning of the court can be attributed to the provision itself, and also to the fact that the court wanted to interpret the provision very narrowly because it is related to the imposition of penalties.

abnormal returns by using inside information. On the other side, in the U.S. one could predict that the reported data include such trading from which insiders obtain extra returns from inside information since all the tippees are liable. Thus we need to make one criterion about what illegal insider trading is and to use another way to collect information about insider trading since it is not reasonable to analyze insider trading with the reported data. We follow the definition of illegal insider trading in the U.S. and analyze the behavior of stock prices near announcements.

3. Data

In this chapter, as mentioned in the above chapter, we adopt the event study method, which is used to examine reactions of the markets of interest. As we pointed out earlier, one might think that much of the data used in the prior insider trading literature was questionable. Since they are self-reported to the SEC and it is most likely that insiders tend to avoid revealing their use of inside information to get abnormal returns, one might not be sure whether such trading is legal or illegal. There is no simple way to prove it.[83]

For this reason, we conducted our research in a different way, using the event study method to test for illegal insider trading before public news announcements. An event study is an analysis of whether there was a statistically significant reaction in financial markets to past occurrences of a given type of event that is hypothesized to affect public firms' market values. So event studies measure security price changes in response to events. Our events are public news announcements about firms and our goal is to investigate insider trading around the date of these public announcements. This method is based on the semi-strong version of the efficient market hypothesis.

[83] Courts have used the event study method to detect illegal insider trading.

Under this hypothesis, if there is no illegal insider trading before the announcements, we can infer that there should be no abnormal price changes in reaction to an event until public announcements are made public and a clean jump on the public announcement day of the event given that other things are equal. On the other hand, if there is insider trading before the public announcements, there should be abnormal changes before these public announcements.

We utilize three kinds of data. The first type of data is daily closing stock price data, which are collected for each stock in the U.S. and in Korea. These data for the U.S. are obtained from the CRSP and for Korea from the Datastream.[84] The second type of data is stock market index data, the CRSP Value Weighted Index[85] and the KOSPI collected from the CRSP and the Datastream respectively as well. The last type of data is public news announcements, collected via the Factiva database system[86] and the Korean Investors' Network for Disclosure System (KIND).[87]

There are over 600 firms on the Korean Stock Exchange. Among them we selected 70 firms by screening. First, we did not consider firms that did not exist during the entire study period, from January 1994 through December 2005. Then we chose only those firms that are actively traded and event newsworthy. Only 70 firms passed this screening. For the U.S. stock exchange, we considered only the Dow Jones Industrial Average Index (DJI) constituent firms. Over the study period there were three changes in DJI constituents. On Nov. 1, 1999 Chevron, Goodyear Tire and Rubber Company, Sears Roebuck, and Union Carbide were replaced by Intel, Microsoft, Home Depot, and SBC Communications. On Apr. 8, 2004 International Paper, AT&T, and Eastman

[84] CRSP does not provide Korean firms' daily stock price data.
[85] Mackinlay (1997) suggests three most popular choices for this market return. They are the S&P 500 Index, the CRSP Value Weighted Index, and the CRSP Equal Weighted Index.
[86] http://www.factiva.com [Factiva, from Dow Jones] "provides essential business news and information together with the content delivery tools and services that enable professionals to make better decisions faster. Factiva's unrivaled collection of more than 10,000 authoritative sources."
[87] http://dart.fss.or.kr

Kodak were replaced by Pfizer, Verizon, and the American International Group Inc. On Dec. 1, 2005 there was a merger between AT&T and SBC Communications. So AT&T rejoined the DJI. Except for Sears Roebuck and Union Carbide, all of the four firms existed over the whole study period. The number of DJI constituents is thirty. Thus we included 34 companies for the U.S.

We investigated 567 public news announcements about the Korean and the U.S. stock markets from January 1994 through December 2005. First, we classified each of these by type of news announcements, bad and good. In order to do so, we evaluated the news content and looked at the price change directions after the public announcements. For the Korean data, we further divided the total sample into two sub-sample groups, before-1998 and after-1997. The news announcements we looked at contain information about mergers, acquisitions, takeovers, spin-offs, sell-offs, lay-offs, dividends, joint ventures, and other important corporate events. Table 4.1 shows the basic information about the news announcements we collected and use. The numbers of announcements are shown by types and study periods. There are a total of 378 announcements for the Korean firms and 189 announcements for the U.S. firms.

Table 4.1 Numbers of News Announcements by Type

		Good News	Bad News
Before Crisis	1994-1997		
	Korea	104	91
After Crisis	1998-2005		
	Korea	95	88
Whole Period	1994-2005		
	Korea	199	179
	U.S.	98	91

The KOSPI and the CRSP Value Weighted Index during the period we consider are used for the market portfolios of Korea and the U.S. respectively. Figure 4.1 shows the series of the KOSPI over the last years.

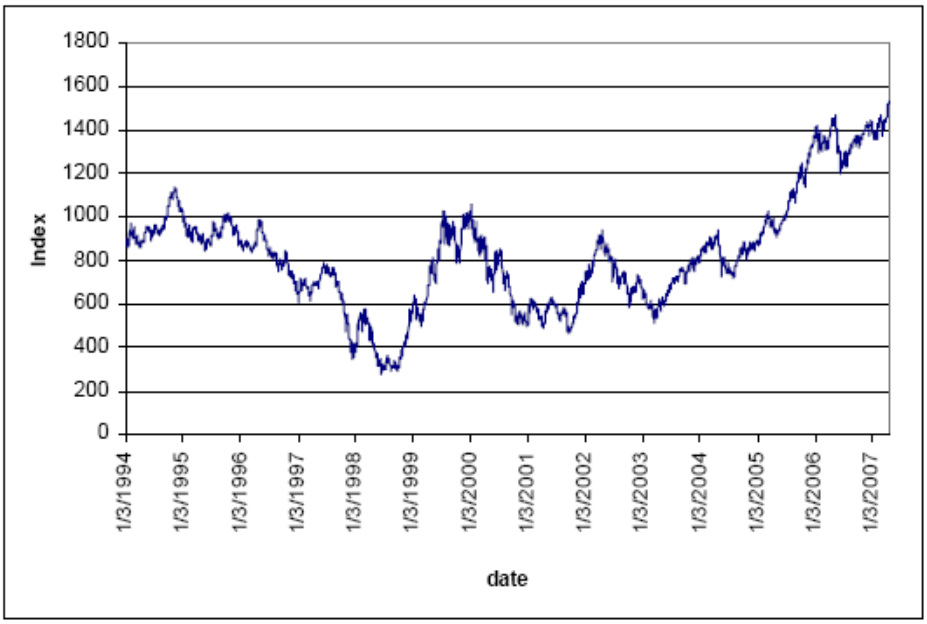

Figure 4.1 The Korean Composite Stock Price Index (KOSPI)

4. Estimation Procedure: the Event Study Method

The event study method is one of the most popular methods in the finance and economics literature. Kothari and Warner (2006) reports that the number of articles published in the five leading[88] journals in finance using this method was 565 for the years 1974 through 2000. When there is an event which can affect economic variables,

[88] The five leading journals are the Journal of Business, Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, and the Review of Financial Studies.

economists may be interested in measuring the effect that the event can have on the variables. Event study makes it possible to analyze the effect of an event on economic variables of interest.

This method looks at behavior of abnormal returns of securities around event dates that researchers are interested in. The basic idea of this method is to obtain normal returns for each firm for each day and to compare these to the realized returns of the firm. The event study literature uses the term abnormal returns to indicate the differences between the two returns. Thus we need to define what normal returns are. In this literature, there are many approaches[89] available to calculate the abnormal returns of a given stock on a given day. In this chapter we use the market model which relates the return of a stock to the return of the market portfolio. In this model a normal return is the predicted return associated with the market return on the same day.

In order to calculate normal returns of stock i at time t, we utilize the closing price of stock i on day t and the KOSPI or the CRSP Value Weighted Index for each market portfolio[90] on day t. The realized daily returns of stock i are defined as follows:

$$R_{it} = \ln P_{it} - \ln P_{it-1}$$

Next, as in the event study literature, we consider an abnormal return at time t as the difference between the actual return at time t in the event window and the normal return at time t in the window. For firm i, the abnormal return for event date τ is defined as follows:

$$AbRet_{i\tau} = R_{i\tau} - E(R_{i\tau}|X_{\tau})$$

[89] The constant mean model, the market model, the factor model, and the economic model.
[90] The most popular choices for the U.S. market portfolio are the S&P 500 Index, the CRSP Value Weighted Index, and the CRSP Equal Weighted Index and for Korea is the KOSPI.

where $AbRet_{i\tau}$, $R_{i\tau}$, and $E(R_{i\tau}|X_\tau)$ are the abnormal return, actual, and normal returns respectively for the event date τ. X_τ is the given information at the time τ. The market model[91] we adopt here assumes a linear relationship between the market return and the stock return. For stock i, the market model is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$
$$E(\varepsilon_{it}) = 0$$
$$Var(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$$

where R_{it} and R_{mt} are stock i's return and the market portfolio return at time t respectively.[92] As in the literature, the basic method we use to obtain abnormal returns is to calculate the difference between the realized stock return and the expected stock return over the event window using the market model parameter estimates and the market index return as a market portfolio return.

We assume that error terms have zero means and the same $\sigma^2_{\varepsilon_i}$ variances overtime for each individual i. We also assume no clustering.[93] [94] Therefore, α_i , β_i and $\sigma^2_{\varepsilon_i}$ are firm i specific parameters to be estimated with each firm's stock price data over the estimation window. We also assume these firm specific parameters of the Korean firms may change near the Asian crisis while those of the U.S. firms do not change during the study period. Consequently we estimate the parameters of the Korean firms dividing samples into two subgroups using the Hansen's (1997) method of dating the

[91] Which model of normal returns should be used remains an open question since event studies are a joint test of market efficiency and a model of normal returns. Fama (1998) mentions that "all models for expected returns are incomplete descriptions of the systematic patterns in average returns." However, Kothari and Warner (2006) concludes "from the standpoint of event study analysis, this flaw is not fatal". p.25.
[92] This model can be written together with a dummy variable. See Salkever (1976) and Karafiath (1998).
[93] Since our news announcements data do not overlap, this assumption is not too restrictive.
[94] DaGraca and Masson (2004) allow the clustering effect and provide a feasible method to obtain the GLS estimates under the assumption that contemporary covariances among firms could be non-zero.

structural change. We obtained the most plausible break date assuming that it is unknown.

To estimate these parameters first, we defined the event dates. These consist of the dates when the firms under consideration made their corporate announcements and when news related to the firms first appeared by using Factiva system and the KIND.[95] As stated in the previous section, we analyzed 567 news announcements of 104 firms in this study. We chose a 41-day-long event window period, that is, for each announcement date, we use twenty days before the day, the day, and twenty days after the day as the event window for the event. It is common for an event window to have more than one day since researchers are not able to know when the event occurred exactly. The length of our event window, however, is longer than those in usual event studies. Since we focused on abnormal behavior of stock prices prior to the announcement dates, we have a longer window period and look at changes in abnormal returns in the event windows.

We define an estimation window as all of the trading days less the days in event windows. The most common method to choose the estimation windows is to select only some of the prior trading days[96] for each event window. Two issues may arise about this common method. The first is that it is very common for a firm to have multiple events during the study period. Then this method would mean that all the firm specific parameters may change whenever an event occurs. Thus, different parameter estimates are used for every different event without testing if those parameters are indeed different. The second issue is that not all of the available data is being used to

[95] The Korean Investors' Network for Disclosure System.
[96] 60, 90, or 250 trading days are common.

estimate parameters. We decided to use the whole data set[97] for estimating the parameters.[98]

Figure 2 gives some time notations. τ stands for a day in the event window. τ=0 is an event date[99] we found through Factiva or the KIND system. An event window is defined as time from T_1+1 to T_2. The estimation window is selected as the time period from T_0+1 to T_1 and T_2+1 to T_3. We included the post-event period in the estimation window. Let L[100] be the length[101] of the estimation window and $L_0=T_2-T_1$ be the length of the event window. [102]

Figure 4.2 Time Line for an Event Study

We obtain the three market model parameter estimates by using the ordinary least square (OLS) method. Under the regularity conditions, OLS estimators are consistent and efficient. In this chapter we assume these conditions hold. We assume that the market model parameters are the same throughout the study period for the U.S. while allowing for a difference in the parameters between the two periods, before the structural break date and after for Korea if the break date is significant.[103] Therefore we estimate two sets of parameters for Korea and one set of parameters for the U.S. In

[97] More accurately, all the trading days less the days in event windows.
[98] Another possible problem which may arise in this method is the number of data points to be used in a regression. The common method uses only about fifty or sixty points in one regression.
[99] The most plausible announcement date.
[100] $L=L_1+L_2$ where $L_1=T_1-T_0$ and $L_2=T_3-T_2$.
[101] 'Length' means how many trading days are in the window.
[102] This diagram is borrowed from Mackinlay (1997).
[103] From Choe (2007), fourteen firms (YKG, AFM, HDE, SSG, SSR, KAA, LUS, DLI, DGB, BOP, TWI, KUM, HYS, AND DYY) do not have any significant structural break date during the study period.

order not to overlap the event window and the estimation window, we choose days which do not belong to any event windows over the study period as the estimation window. After obtaining estimates of the parameters, we use these estimates to calculate the expected stock return at each event date τ.

$$\widehat{\beta}_i = \frac{\sum_{\tau \in ew} (R_{i\tau} - \frac{1}{L} \sum_{\tau \in ew} R_{i\tau})(R_{m\tau} - \frac{1}{L} \sum_{\tau \in ew} R_{m\tau})}{\sum_{\tau \in ew} (R_{m\tau} - \frac{1}{L} \sum_{\tau \in ew} R_{m\tau})^2}$$

$$\widehat{\alpha}_i = \frac{1}{L} \sum_{\tau \in ew} R_{i\tau} - \widehat{\beta}_i \frac{1}{L} \sum_{\tau \in ew} R_{m\tau}$$

$$\widehat{\sigma}^2_{\varepsilon_i} = \frac{1}{L-2} \sum_{\tau \in ew} (R_{i\tau} - \widehat{\alpha}_i - \widehat{\beta}_i R_{m\tau})^2$$

$$where\ ew = estimation\ window$$

With these estimates, we can measure the sample abnormal returns for firm i and for the event date τ which is the error term of the market model.

$$AR_{i\tau} = R_{i\tau} - \widehat{\alpha}_i - \widehat{\beta}_i R_{m\tau}$$

Under the null hypothesis that the event has no impact on the stock returns, abnormal returns in the event window follow the conditional distribution

$$AR_{i\tau} \sim N[0, \sigma^2(AR_{i\tau})] \quad under\ H_0.$$

$$where\ \sigma^2(AR_{i\tau}) = \widehat{\sigma}^2_{\varepsilon_i} + \frac{1}{L}[1 + \frac{(R_{m\tau} - \frac{1}{L} \sum_{\tau \in ew} R_{m\tau})^2}{\widehat{\sigma}^2_m}].$$

Once we obtain the abnormal returns, we can calculate the average abnormal returns, $\mathbf{AAR}_{i\tau}$ at each date τ in the event window. Then we aggregate these average abnormal returns over the event window. Given N events, the cumulative average abnormal return from τ_1 to τ_2, where $T_1 < \tau_1 \leq \tau_2 \leq T_2$, for stock i is $\mathbf{CAAR}_{i\tau}(\tau_1, \tau_2)$. Then it can be defined as follows:

$$AAR_\tau = \frac{1}{N} \sum_{i=1}^{N} AR_{i\tau}$$

$$CAAR(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AAR_\tau$$

Under the null hypothesis, that the normal returns are zero, the cumulative average abnormal returns in the event window follows the distribution

$$\mathbf{CAAR}(\tau_1, \tau_2) \sim \mathbf{N}\left[0, \mathbf{var}\left(\mathbf{CAAR}(\tau_1, \tau_2)\right)\right] \mathbf{under\ H_0}$$

where $\mathbf{var}\left(\mathbf{CAAR}(\tau_1, \tau_2)\right) = \frac{1}{N^2} \sum_{i=1}^{N} \sigma_i^2(\tau_1, \tau_2)$ and $\sigma_i^2(\tau_1, \tau_2) = (\tau_2 - \tau_1 + 1)\sigma_{\varepsilon_i}^2$. This distribution of CAAR can be used to test the null hypothesis with the following test statistic:

$$\mathbf{t} = \left[\mathbf{CAAR}(\tau_1, \tau_2) / \mathbf{var}\left(\mathbf{CAAR}(\tau_1, \tau_2)\right)^{\frac{1}{2}}\right] \xrightarrow{\mathbf{d}} \mathbf{N(0,1)\ under\ H_0}$$

This result is asymptotic with respect to the number of stocks and the length of estimation window L.

5. Results

5.1 Abnormal Returns

For the U.S. firms, first we estimate the parameters over the whole period and then calculate the CAARs. For the Korean firms, we divide the events into two categories along the period since we want to investigate insider trading behavior changes in the KSE between the period before the structural break date and after.

We estimate the market model parameters, α_i , β_i and $\sigma^2_{\varepsilon_i}$ for each U.S. firm and Korean firm. As stated in the previous section, 56 Korean firms out of 70 have significant structural break dates. For these firms, we estimate two sets of parameters, that is, $(\alpha_i, \beta_i \text{ and } \sigma^2_{\varepsilon_i})^{\text{before}}$ and $(\alpha_i, \beta_i \text{ and } \sigma^2_{\varepsilon_i})^{\text{after}}$ with the estimation window which we defined as the whole study period less the event windows. With these estimates, we obtain normal returns for each firm and calculate sample abnormal returns for each period in the event windows. Then we average the abnormal returns over events and firms and finally obtain the cumulative average abnormal returns (CAAR) over the event period.

The following Table 4.2 and Table 4.3 show the average abnormal returns (AARs) for good events and bad events respectively. For good events, the AAR of Korean firms before the crisis is significantly different from zero on 10th, 4th, 2nd, and 1st day before events at the 5% level of significance. After the crisis, however, the AAR of Korean firms is only significantly different from zero on the 17th days before events at the 5% level. Dow Jones firms have significant AAR only on 19th day before the events. Figure 3 depicts the three AARs for good events for 20 days before events.

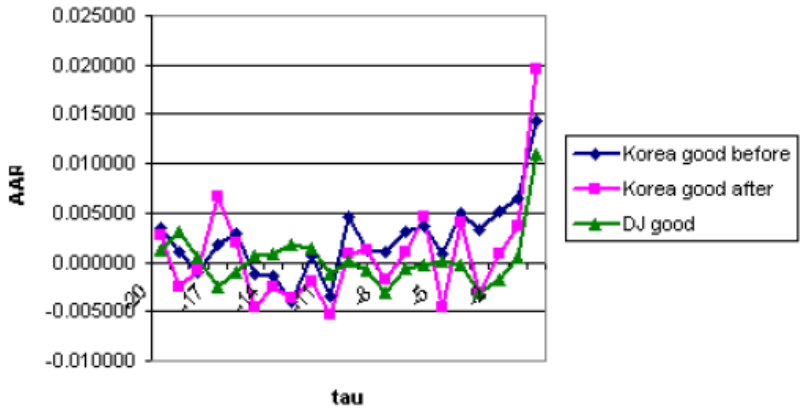

Figure 4.3 Average Abnormal Returns for Good Events before the Crisis

Table 4.2 Average Abnormal Returns for Good Events before the Crisis

	Korean Firms				Dow Jones Firms	
	before		after			
tau	AAR	t value	AAR	t value	AAR	t value
-20	0.003504	1.230	0.002808	0.922	0.001252	0.729
-19	0.001069	0.375	-0.002424	-0.796	0.003113	1.813**
-18	-0.001066	-0.374	-0.000883	-0.290	0.000396	0.231
-17	0.001881	0.660	0.006655	2.185**	-0.002465	-1.436
-16	0.003008	1.056	0.001913	0.628	-0.001014	-0.590
-15	-0.001261	-0.443	-0.004633	-1.522	0.000625	0.364
-14	-0.001478	-0.519	-0.002544	-0.836	0.000810	0.472
-13	-0.003970	-1.393	-0.003652	-1.199	0.001763	1.027
-12	0.000644	0.226	-0.001894	-0.622	0.001502	0.875
-11	-0.003382	-1.187	-0.005352	-1.758	-0.001125	-0.656
-10	0.004692	1.646**	0.000839	0.276	0.000052	0.030
-9	0.001198	0.421	0.001248	0.410	-0.000815	-0.475
-8	0.000956	0.335	-0.001751	-0.575	-0.003099	-1.805
-7	0.003192	1.120	0.000958	0.315	-0.000644	-0.375
-6	0.003583	1.257	0.004601	1.511*	-0.000312	-0.182
-5	0.000819	0.287	-0.004524	-1.486	0.000168	0.098
-4	0.005048	1.771**	0.004101	1.347*	-0.000290	-0.169
-3	0.003251	1.141	-0.003058	-1.004	-0.003147	-1.833
-2	0.005224	1.833**	0.000832	0.273	-0.001797	-1.047
-1	0.006445	2.262**	0.003632	1.193	0.000498	0.290
0	0.014352	5.036***	0.019573	6.428***	0.010916	6.358***

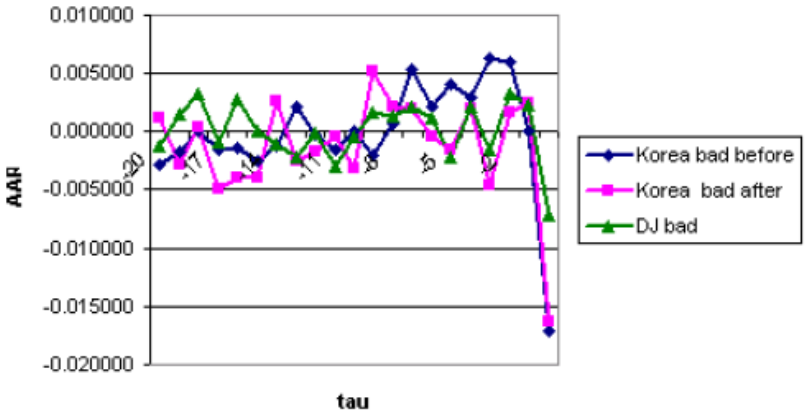

Figure 4.4 Average Abnormal Returns for Bad Events before the Crisis

Table 4.3 Average Abnormal Returns for Bad Events before the Crisis

	Korean Firms				Dow Jones Firms	
	before		after			
tau	AAR	t value	AAR	t value	AAR	t value
-20	-0.002825	-0.884	0.001117	0.364	-0.001272	-0.728
-19	-0.001787	-0.559	-0.002826	-0.922	0.001427	0.816
-18	0.000073	0.023	0.000320	0.104	0.003221	1.843
-17	-0.001612	-0.504	-0.004852	-1.583*	-0.000936	-0.536
-16	-0.001448	-0.453	-0.003921	-1.279*	0.002805	1.605
-15	-0.002507	-0.784	-0.003928	-1.282*	0.000086	0.049
-14	-0.001211	-0.379	0.002698	0.880	-0.001050	-0.601
-13	0.002199	0.688	-0.002465	-0.804	-0.002204	-1.261
-12	-0.000341	-0.107	-0.001646	-0.537	-0.000084	-0.048
-11	-0.001573	-0.492	-0.000460	-0.150	-0.002996	-1.714**
-10	-0.000003	-0.001	-0.003181	-1.038	-0.000472	-0.270
-9	-0.002067	-0.646	0.005170	1.687	0.001599	0.915
-8	0.000734	0.230	0.002093	0.683	0.001413	0.809
-7	0.005406	1.691	0.001903	0.621	0.002166	1.239
-6	0.002157	0.675	-0.000429	-0.140	0.001112	0.636
-5	0.004144	1.296	-0.001574	-0.514	-0.002180	-1.247
-4	0.002931	0.917	0.002011	0.656	0.002206	1.262
-3	0.006301	1.971	-0.004661	-1.521*	-0.001484	-0.849
-2	0.005962	1.865	0.001657	0.541	0.003304	1.890
-1	0.000047	0.015	0.002447	0.798	0.002251	1.288
0	-0.017091	-5.345***	-0.016298	-5.317***	-0.007215	-4.128***

For bad events before the crisis, the behavior of AARs looks different. Korean firms do not have any significant AAR before events at the 5% level. On the other hand, all the six AARs on the event day are significantly different from zero. Figure 4.4 shows the AARs for bad events.

The following Table 4.4 and Table 4.5 report the cumulative average abnormal returns which are calculated from 20 days before for each type of events. Two separate graphs for Korea and one for the U.S. are shown in Figure 4.4 and 4.5. First of all, comparing to the U.S. CAAR line, which does not move up much prior to the time $\tau=0$, surprisingly before-crisis Korean CAARs for good events show a clear upward movement prior to the announcement date. Around ten days before the event date it starts up and continues until around ten days after the date. The movement before the event date may be interpreted as insider trading. On the other hand, as we shall show below, after-crisis Korean CAARs for good events do not move much prior to the date. They behave like the CAARs of DJ firms for good events, which is our benchmark line. In Table 4.4 the CAAR of Korean firms for the before crisis period becomes significant after $\tau=-3$ at the 5% level but the other two CAARs do not show any significant period except for the 9th day before events for DJ firms.

Figure 4.6 shows the movements of CAARs for the bad events near the announcement dates. For these CAARs, an unexpected movement is observed: going up a few days prior to the announcement date of bad events. This abnormal phenomenon might be explained by considering the tendency that firms want to avoid taking big falls of their stock prices. Thus one could think that they might reveal good news before announcing bad news if they could. However we do not delve into this issue in this chapter. We postpone explaining this to another research. This going up behavior of CAARs is much bigger in the before-crisis CAARs than after-crisis. Thus, one could think the market became cleaner after the Asian crisis than before.

While the U.S. CAARs do not seem to have a particular pattern, the two Korean CAARs, from about 20 days prior to the announcement date slowly decrease and keep getting lower until about 7 days before the announcement date. After that both CAARs start going up until the announcement date and suddenly plummet on the date even though the after-crisis Korean CAAR seems to get much lower. This is because it does not go up as much as the before-crisis Korean CAAR does. These curves also show the over-falling behavior of bad events which is consistent with the existing literature.

These two different behaviors of CAARs in the post event period are shown more clearly in Table 4.6 and 4.7. Most of the CAARs of Korean firms for the good events are significant at the 10% level if they are calculated from τ=-10. However none of the CAARs for bad events of DJ or Korean firms are significant even at the 10% level.

In Figure 4.4, the notable increase in CAARs following good events for Korean firms indicates that there may have been significant insider trading behavior before the crisis in the KSE. After the crisis, however, this behavior seems to be reduced since there is not significant movement of CAARs in the pre-event period.

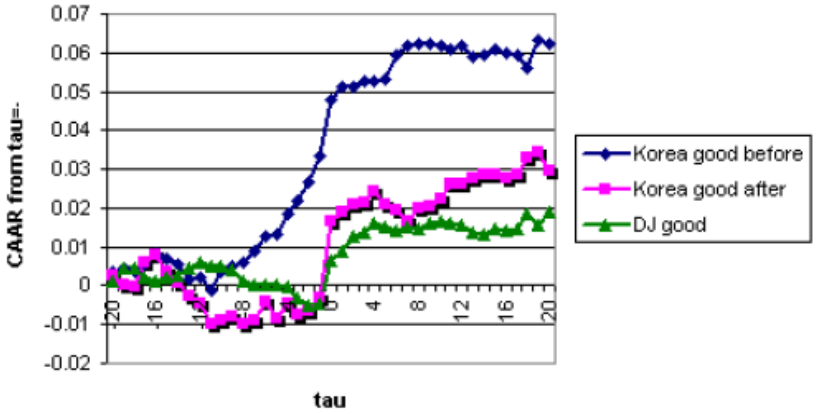

Figure 4.5 Cumulative AARs for Good Events

Table 4.4 Cumulative AARs for Good Events

	Korean Firms				Dow Jones Firms	
	before		after			
tau	CAAR	t value	CAAR	t value	CAAR	t value
-20	0.003504	1.230	0.002808	0.922	0.001252	0.729
-19	0.004573	1.135	0.000384	0.089	0.004365	1.797**
-18	0.003506	0.710	-0.000499	-0.095	0.004761	1.601*
-17	0.005387	0.945	0.006155	1.011	0.002295	0.668
-16	0.008395	1.317*	0.008068	1.185	0.001282	0.334
-15	0.007133	1.022	0.003435	0.461	0.001906	0.453
-14	0.005655	0.750	0.000891	0.111	0.002717	0.598
-13	0.001685	0.209	-0.002761	-0.321	0.004480	0.923
-12	0.002329	0.272	-0.004656	-0.510	0.005982	1.162
-11	-0.001053	-0.117	-0.010007	-1.039	0.004857	0.895
-10	0.003639	0.385	-0.009168	-0.908	0.004909	0.862
-9	0.004838	0.490	-0.007920	-0.751	0.004094	0.688
-8	0.005793	0.564	-0.009671	-0.881	0.000996	0.161
-7	0.008985	0.843	-0.008713	-0.765	0.000351	0.055
-6	0.012568	1.139	-0.004112	-0.349	0.000039	0.006
-5	0.013387	1.175	-0.008637	-0.709	0.000208	0.030
-4	0.018436	1.569*	-0.004535	-0.361	-0.000082	-0.012
-3	0.021686	1.793**	-0.007593	-0.588	-0.003229	-0.443
-2	0.026910	2.166**	-0.006761	-0.509	-0.005027	-0.672
-1	0.033356	2.617***	-0.003129	-0.230	-0.004529	-0.590
0	0.047707	3.653***	0.016444	1.179	0.006388	0.812

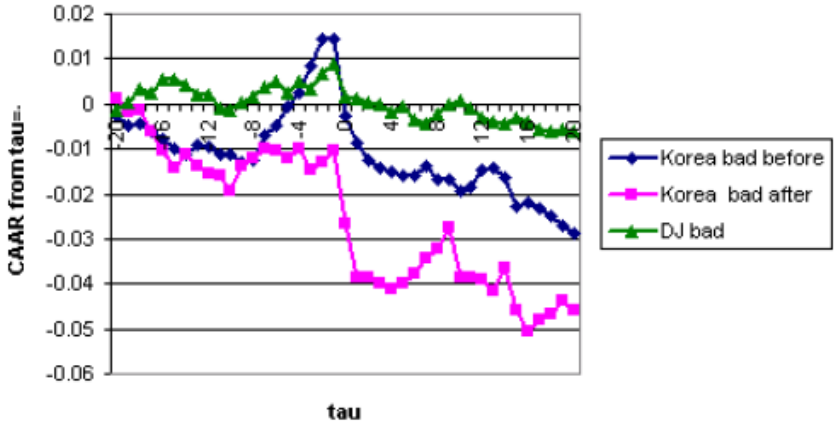

Figure 4.6 Cumulative AARs for Bad Events

Table 4.5 Cumulative AARs for Bad Events

	Korean Firms				Dow Jones Firms	
	before		after			
tau	CAAR	t value	CAAR	t value	CAAR	t value
-20	-0.002825	-0.884	0.001117	0.364	-0.001272	-0.728
-19	-0.004612	-1.020	-0.001709	-0.394	0.000155	0.063
-18	-0.004539	-0.820	-0.001390	-0.262	0.003377	1.115
-17	-0.006151	-0.962	-0.006242	-1.018	0.002440	0.698
-16	-0.007599	-1.063	-0.010163	-1.482*	0.005246	1.342
-15	-0.010106	-1.290*	-0.014091	-1.876**	0.005332	1.245
-14	-0.011317	-1.337*	-0.011394	-1.404*	0.004282	0.926
-13	-0.009118	-1.008	-0.013859	-1.598*	0.002078	0.420
-12	-0.009459	-0.986	-0.015505	-1.686**	0.001994	0.380
-11	-0.011033	-1.091	-0.015965	-1.647**	-0.001002	-0.181
-10	-0.011035	-1.041	-0.019146	-1.883**	-0.001474	-0.254
-9	-0.013102	-1.183	-0.013975	-1.316*	0.000125	0.021
-8	-0.012368	-1.073	-0.011882	-1.075	0.001538	0.244
-7	-0.006962	-0.582	-0.009980	-0.87	0.003704	0.566
-6	-0.004805	-0.388	-0.010409	-0.877	0.004816	0.711
-5	-0.000661	-0.052	-0.011983	-0.977	0.002636	0.377
-4	0.002270	0.172	-0.009972	-0.789	0.004842	0.672
-3	0.008572	0.632	-0.014633	-1.125	0.003358	0.453
-2	0.014534	1.043	-0.012976	-0.971	0.006661	0.874
-1	0.014581	1.020	-0.010529	-0.768	0.008912	1.140
0	-0.002509	-0.171	-0.026828	-1.919**	0.001696	0.212

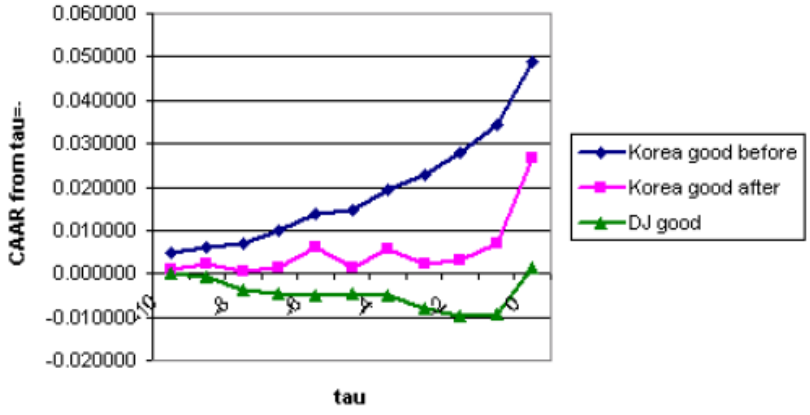

Figure 4.7 Cumulative AARs for Good Events

Table 4.6 Cumulative AARs for Good Events

	Korean Firms				Dow Jones Firms	
	before		after			
tau	CAAR	t value	CAAR	t value	CAAR	t value
-10	0.004692	1.646**	0.000839	0.276	0.000052	0.030
-9	0.005890	1.461*	0.002087	0.485	-0.000762	-0.314
-8	0.006846	1.387*	0.000336	0.064	-0.003861	-1.299
-7	0.010038	1.761**	0.001294	0.213	-0.004506	-1.312
-6	0.013621	2.137**	0.005895	0.866	-0.004818	-1.255
-5	0.014440	2.069**	0.001371	0.184	-0.004649	-1.106
-4	0.019488	2.585***	0.005472	0.679	-0.004939	-1.087
-3	0.022739	2.821***	0.002414	0.280	-0.008086	-1.665
-2	0.027963	3.271***	0.003246	0.355	-0.009884	-1.919
-1	0.034409	3.818***	0.006878	0.714	-0.009386	-1.729
0	0.048760	5.159***	0.026452	2.619***	0.001531	0.269

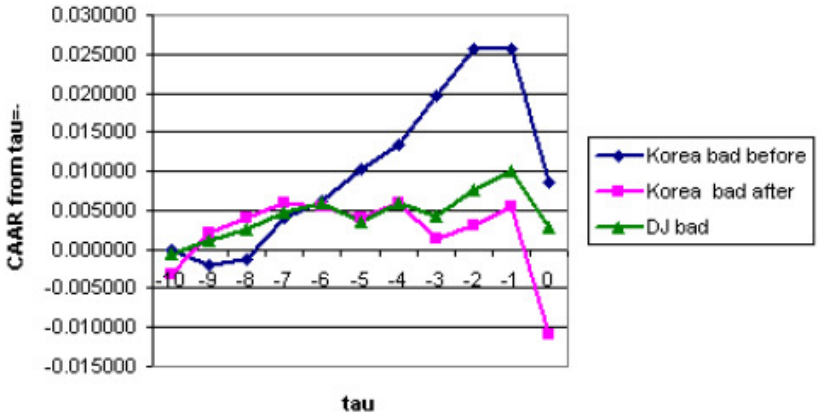

Figure 4.8 Cumulative AARs for Bad Events

Table 4.7 Cumulative AARs for Bad Events

	Korean Firms				Dow Jones Firms	
	before		after			
tau	CAAR	t value	CAAR	t value	CAAR	t value
-10	-0.000003	-0.001	-0.003181	-1.038	-0.000472	-0.270
-9	-0.002070	-0.458	0.001989	0.459	0.001127	0.456
-8	-0.001335	-0.241	0.004082	0.769	0.002541	0.839
-7	0.004070	0.637	0.005985	0.976	0.004706	1.346
-6	0.006228	0.871	0.005556	0.811	0.005818	1.489
-5	0.010372	1.324	0.003982	0.530	0.003638	0.850
-4	0.013303	1.572	0.005993	0.739	0.005844	1.264
-3	0.019604	2.167	0.001332	0.154	0.004360	0.882
-2	0.025567	2.665	0.002989	0.325	0.007664	1.461
-1	0.025614	2.533	0.005435	0.561	0.009914	1.793
0	0.008523	0.804	-0.010863	-1.068	0.002699	0.466

5.2 Abnormal Volume

Many works report that abnormal trading volume can be used to analyze information leakage through the event study. The basic idea of this comes from the market microstructure literature. According to the literature, when a piece of news arrives, it affects the magnitude of the trading volume of the associated stock. It makes the trading volume bigger. Thus, we set up a model to test if there is abnormal volume before announcements with the null hypothesis that the abnormal volume is zero for both good and bad events against the alternative that it is greater than zero. Therefore we did one-sided tests with the same alternative hypothesis for both good and bad events.

Ajinkya and Jain (1989) show that raw trading volume of securities is highly nonnormal. They find, however, a log-transformation of trading volume yields normally distributed measures. Their work analyzes initially the distribution of the raw trading volume and provides valuable insights into the use of trading volume measures in an event study setting. As seen in Figures 4.9 and 4.10, [104] trading volume does not seem to be normally distributed, but after log transformation, it follows the normal distribution.[105]

[104] Ajinkya and Jain (1989)
[105] Ajinkya and Jain (1989)

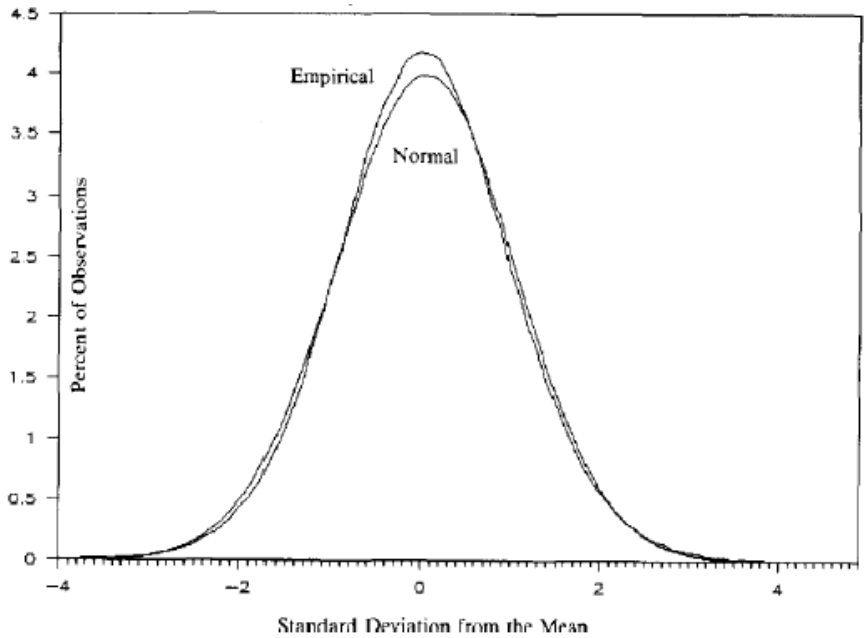

Figure 4.9 Value Traded (Raw Volume)

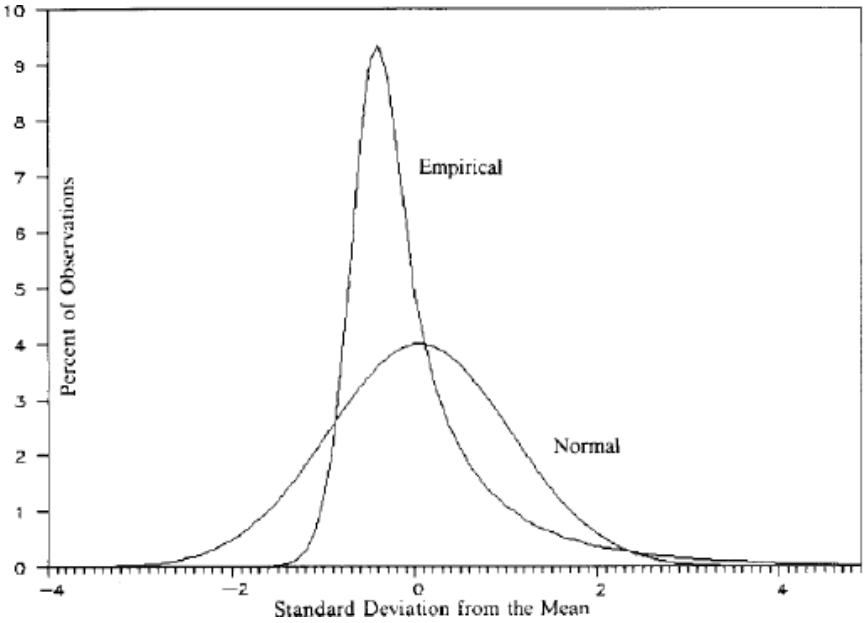

Figure 4.10 Value Traded (Log Transformed Volume)

Meulbroek (1990) reports a significant day-of-the-week effect in trading volume data in her work. Thus we adapt the log-transformation and the day-of-the-week effect

in this work. There is one important different fact about daily trading volume from daily stock returns. The former exhibits first order autocorrelation in most cases. If autocorrelations are ignored, then the test statistics will be overestimated and, as a result, the null hypothesis will be over-rejected. Therefore, this feature must be incorporated in the model to test abnormal trading volume.

We take care of all these special features of trading volume data and estimate the following relationship,

$$Vol_t - Vol_{t-1} = \delta + \lambda_t(Vol_{t-1} Vol_{t-2}) + \sum_{j=1}^{4} \gamma_j D_j + \epsilon_t$$

Vol_t is log-transformed volume at day t, the D_js are day-of-the-week dummy variables for Monday through Thursday, and ϵ_t is the mean zero, normally distributed error term of stock i on day t. Tables 4.8 and 4.9 show the results for the averaged abnormal volume.[106] For good events in Korea the trading volume is significantly bigger than normal volume two days before the announcements before the crisis while after the crisis there is no significant abnormal volume up to more than ten days before. Dow Jones firms' data shows there is a significant abnormal volume eight and thirteen days before the announcements. For bad events, only Korean data before crisis exhibits significant abnormal volume on the seventeenth and eleventh days before the announcements at the 5% level.

[106] We do not use the cumulative averaged abnormal volume to see the behavior of abnormal volume since the model is set up by the difference of log volume. Even though there is a positive abnormal volume, the CAAV may not detect it if the difference is zero.

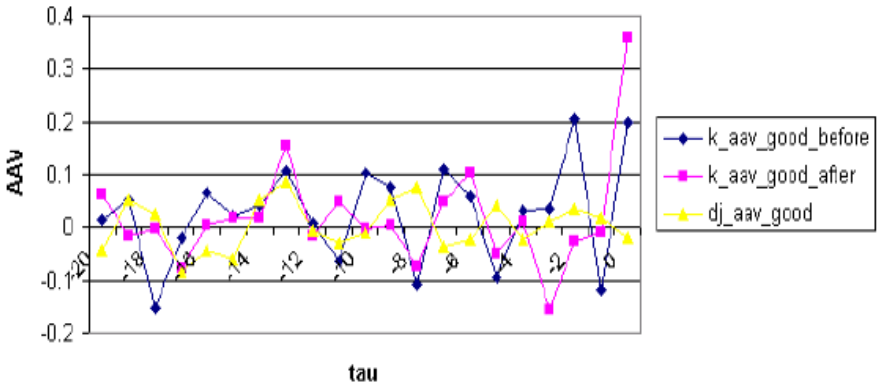

Figure 4.11 Average Abnormal Volume for Good Events

Table 4.8 Average Abnormal Volume for Good Events

	Korean Firm Good Before		Korean Firm Good After		DJ Firm Good	
tau	AAV	t value	AAV	t value	AAV	t value
-20	0.01352	0.17705	0.06319	0.76368	-0.04319	-1.03895
-19	0.05270	0.69022	-0.01516	-0.18316	0.05230	1.25802
-18	-0.15087	-1.97596	-0.00207	-0.02507	0.02413	0.58039
-17	-0.01815	-0.23769	-0.07640	-0.92331	-0.08400	-2.02064
-16	0.06564	0.85963	0.00357	0.04310	-0.04354	-1.04737
-15	0.02079	0.27230	0.01932	0.23345	-0.06143	-1.47758
-14	0.04221	0.55278	0.01864	0.22526	0.05391	1.29682*
-13	0.10567	1.38394	0.15460	1.86833**	0.08727	2.09933**
-12	0.00826	0.10822	-0.01428	-0.17255	-0.00636	-0.15303
-11	-0.06427	-0.84174	0.05051	0.61037	-0.03025	-0.72777
-10	0.10432	1.36629	-0.00234	-0.02832	-0.00807	-0.19420
-9	0.07659	1.00302	0.00467	0.05648	0.05193	1.24910
-8	-0.10944	-1.43326	-0.07324	-0.88518	0.07491	1.80201**
-7	0.11050	1.44714	0.04901	0.59226	-0.03669	-0.88256
-6	0.05934	0.77713	0.10221	1.23525	-0.02393	-0.57568
-5	-0.09423	-1.23407	-0.04868	-0.58834	0.04041	0.97209
-4	0.03202	0.41936	0.01086	0.13127	-0.02119	-0.50980
-3	0.03655	0.47874	-0.15467	-1.86918	0.01173	0.28220
-2	0.20672	2.70740***	-0.02514	-0.30386	0.03422	0.82323
-1	-0.11833	-1.54980	-0.01057	-0.12773	0.01866	0.44898
0	0.19834	2.59757***	0.35853	4.33287***	-0.01812	-0.43590

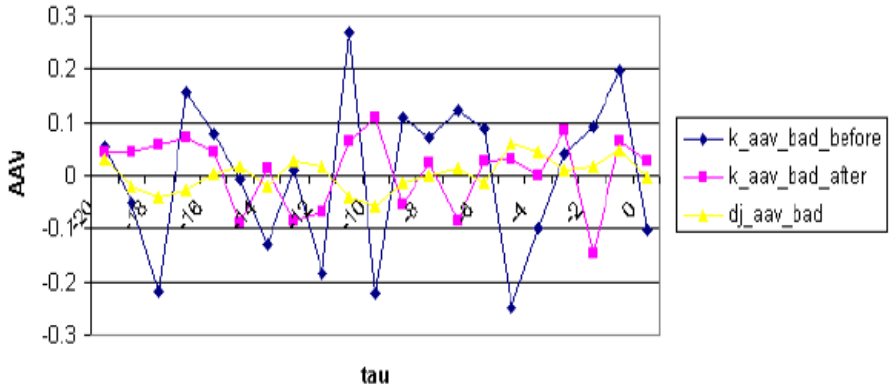

Figure 4.12 Average Abnormal Volume for Bad Events

Table 4.9 Average Abnormal Volume for Bad Events

	Korean Firm Bad Before		Korean Firm Bad After		DJ Firm Bad	
tau	AAV	t value	AAV	t value	AAV	t value
-20	0.05606	0.59886	0.04548	0.52468	0.02919	0.64154
-19	-0.05170	-0.55222	0.04477	0.51650	-0.01951	-0.42874
-18	-0.21789	-2.32746	0.05859	0.67594	-0.04095	-0.90014
-17	0.15749	1.68228**	0.07250	0.83637	-0.02850	-0.62636
-16	0.07811	0.83440	0.04325	0.49887	0.00254	0.05590
-15	-0.00623	-0.06650	-0.08883	-1.02477	0.01639	0.36016
-14	-0.13002	-1.38891	0.01342	0.15477	-0.01891	-0.41572
-13	0.01080	0.11534	-0.08423	-0.97167	0.02681	0.58935
-12	-0.18297	-1.95445	-0.06917	-0.79789	0.01873	0.41167
-11	0.27023	2.88664***	0.06515	0.75151	-0.04045	-0.88904
-10	-0.22074	-2.35799	0.10936	1.26162	-0.05685	-1.24954
-9	0.10965	1.17128	-0.05355	-0.61780	-0.01347	-0.29605
-8	0.07175	0.76647	0.02472	0.28519	0.00144	0.03173
-7	0.12271	1.31077	-0.08643	-0.99702	0.01326	0.29145
-6	0.08778	0.93763	0.02869	0.33098	-0.01365	-0.30005
-5	-0.24955	-2.66572	0.03018	0.34811	0.06225	1.36828*
-4	-0.09847	-1.05184	-0.00123	-0.01420	0.04389	0.96470
-3	0.04029	0.43042	0.08635	0.99609	0.00947	0.20819
-2	0.09150	0.97737	-0.14770	-1.70388	0.01656	0.36388
-1	0.19860	2.12149**	0.06381	0.73606	0.04793	1.05342
0	-0.10350	-1.10557	0.02726	0.31448	-0.00334	-0.07351

We provide one more analysis following methods from Bhattacharya, Daouk, Jorgenson, and Kehr (2000). They report the normalized daily volume figure in their paper. The normalized daily volume is calculated by dividing volume of a stock by the average daily trading volume of it in the event period and then by averaging across all stocks for each day. Figures 13 and 14 show the normalized daily volume for good and bad events respectively. Only Korean firms' data before the crisis exhibits relatively large normalized volumes for some days before the announcements. This result is consistent with that of in the previous section.

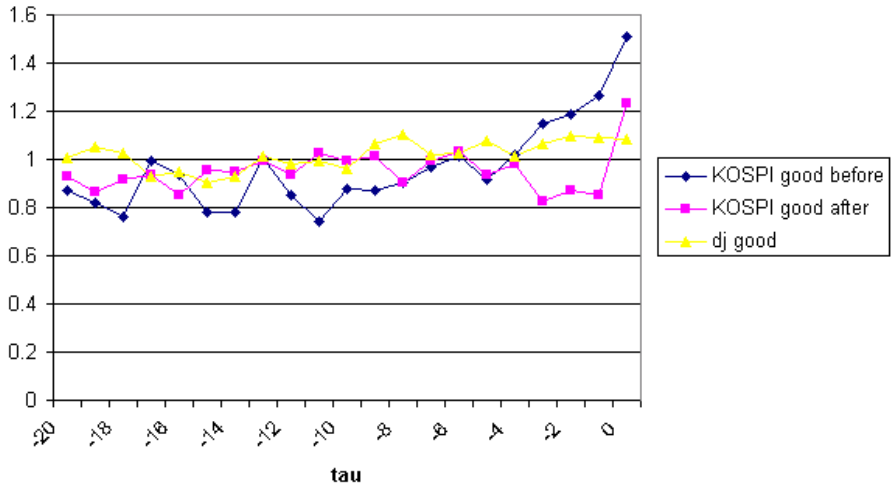

Figure 4.13 The Normalized Daily Volume for Good Events

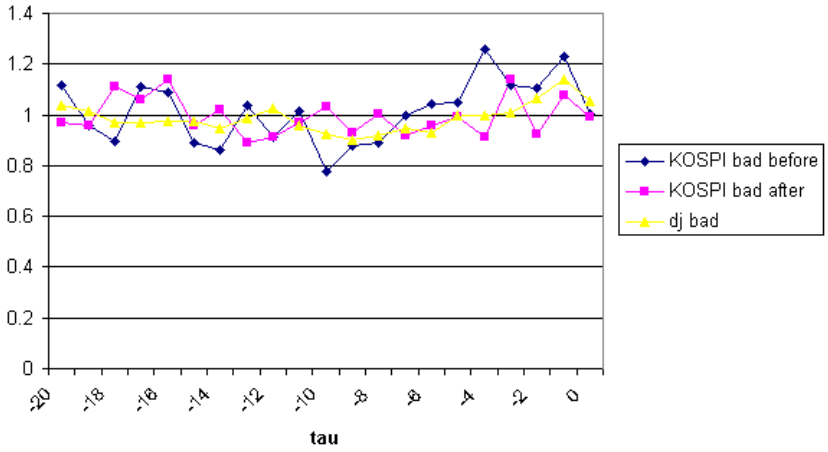

Figure 4.14 The Normalized Daily Volume for Bad Events

6. Conclusion

We investigated evidence of insider trading in the periods before and after the Asian crisis using the event study method. We used all the available data during the study period to estimate firm specific parameters and divide the data sets of Korean firms into before and after subsets according to the results of estimation of structural changes. Then we use these estimates to calculate abnormal returns.

The behavior of abnormal returns for good news in the KSE revealed the possibility that there may have been insider trading before the crisis. On the other hand, we did not find any evidence of information leakage during the study period after the crisis. With these observations, we could compare what happened in the two periods considered and with this comparison we can conclude that insider trading behavior decreased after the crisis. Consequently we conclude that the KSE became better in terms of cleanliness after restructuring and reform following the Asian crisis.

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CHAPTER 5

CONCLUSION

The Asian crisis in 1997 affected many Asian countries including Korea. Following the crisis, rapid changes were made in government policies and the economic environment to overcome the effect of the big shock on the economy, firms, and corporate environment. Policy changes in the beginning stage focused on the stability of the foreign exchange market, that is, the stability of the Korean won. To implement this, the government promoted reforms on four parts: reform of corporate structures, reform of the financial sector, reform of labor relationships, and reform of government-owned corporations.

The government policy in the beginning was to constrict aggregate demand in order to decrease imports and then to keep more foreign reserves. As a result, the annual interest rate rose steeply to 30%.[107] After that the exchange rate was stabilized and the liquidity problem was solved by the middle of 1998. Accordingly, the government changed its policy from contraction to stimulation of the economy.

Reform of corporate structure focused on liquidating faltering enterprises in the short run, and preventing recurrence of a financial crisis in the long run. Liquidating faltering enterprises was implemented through workouts and exchanging businesses between Chaebols, the so called Big Deals. The '5 and 3 rules' were the basis for prevention of another financial crisis. The reform of the financial sector was the most important and elaborated reform. The government used public funds to normalize the financial sector and established a comprehensive monitoring institution[108] to control all types of financial agents.

[107] It was about 12% before the crisis.
[108] Financial Supervisory and Services Commission

Also, the government legislated layoffs while implementing reform of the corporate structure of Chaebols and the financial sector. The government's plan for privatization of government-owned corporations was to immediately privatize 5 of the 26 government-owned corporations, to step by step privatize 6 others, and to reform the structures of the remaining 15 corporations.

This reform which was implemented following the crisis, played an important role in defending enterprises and the financial sector against insolvency and contributed to the soundness of the financial structure. Foreign direct investment, exchange trading, and liberalization of the capital market made a rapid progress through opening of financial markets. Also, business transparency has been enhanced by requiring the Chaebols to report joint financial statements and by the amending of business accounting standards. With regard to corporate governance structure, the outside director system has been required by law and minority shareholders' rights have been strengthened.

In this dissertation we examined corporate governance, firms, and insider trading in Korea before and after the Asian financial crisis. In Chapter 1, we explained the situation which Korea was in and introduced the government policies that were implemented to overcome the shock to the economy. In Chapter 2, we investigated how corporate governance has changed since the crisis and what are the problems with Korean corporations. Also, using the Fama-French three factor model,[109] we analyzed how corporate governance changes affect firm value. We found that firms obtained statistically significant positive abnormal returns during the period 1998-1999 when major changes in corporate governance were made. Also we found the abnormal return of Chaebol firms was significantly larger than that of non-Chaebol firms during the same period. With respect to the outside director system, the abnormal return of

[109] Fama and French (1993)

KSE firms was significantly larger than that of KOSDAQ firms in 1998 when the system was introduced only to the KSE. However, the abnormal return of KOSDAQ firms was significantly higher than that of KSE firms in 2001 when the system was extended to the KOSDAQ market. With this finding we could conclude that introduction of the outside director system affected firm value positively. We also tested if firm size affects firm value differently. Our finding is that both small firms and large firms obtained statistically significant positive abnormal returns, but the abnormal return of small firms was significantly smaller than that of large firms. However, we failed to find evidence that corporate governance reform negatively affected the value of small firms.

In Chapter 3, we estimated structural breaks for seventy KSE firms and did inference using Hansen's p-value.[110] The break dates of most of the sample of firms were found around the Asian crisis, but some firms do not have any break dates, and other firms have their break dates more than two years later than the crisis

In the Chapter 4, we examined the degree of insider trading before and after the crisis. Since the degree is not an observable variable, we utilized the event study method. We found evidence of insider trading before the crisis by observing abnormal returns prior to the public announcements of good events. After the crisis, however, there were no abnormal returns prior to public announcements. We compared our results with data for the United States which had no abnormal returns prior to announcement dates. Putting these factors together, we concluded that corporate governance reforms after the crisis were effective in reducing insider trading in Korea.

[110] Hansen (1997)

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